SONY®

Video Camera Recorder

Operating Instructions

Before operating the unit, please read this manual thoroughly, and retain it for future reference.
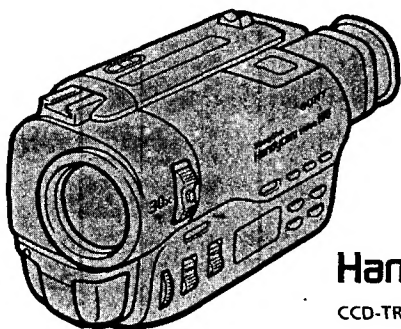
Owner's record

The model and serial numbers are located on the bottom. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. **CCD-**   Model No. **AC-**

Serial No. _____   Serial No. _____

Handycam
CCD-TR910

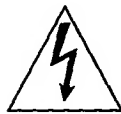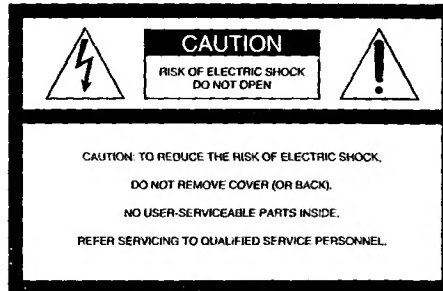video **Hi8**
CCD-TR910 **Hi8**

Video **8**
CCD-TR710 **8**

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,

DO NOT REMOVE COVER (OR BACK).

NO USER-SERVICEABLE PARTS INSIDE.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

DISPOSAL OF LITHIUM ION BATTERY.

LITHIUM ION BATTERY.
DISPOSE OF PROPERLY.

You can return you unwanted lithium ion batteries to your nearest Sony Service Center of Factory Service Center.

Note: In some areas the disposal of lithium ion batteries in household or business trash may be prohibited.

For the Sony Service Center nearest you call 1-800-222-SONY (United States only)

For the Factory Service Center nearest you call 416-499-SONY (Canada only)

Caution: Do not handle damaged or leaking lithium ion battery.

For the Customers in the U.S.A.

WARNING

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

– Reorient or relocate the receiving antenna.
– Increase the separation between the equipment and receiver.
– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
– Consult the dealer or an experienced radio/TV technician for help.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

For the customers in CANADA

CAUTION

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

Table of contents

The instructions in this manual are for the two models listed below. Before you start reading this manual and operating the unit, check your model number by looking at the bottom of your camcorder. The CCD-TR910 is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "CCD-TR910 only." As you read through this manual, buttons and settings on the camcorder are shown in capital letters. e.g. Set the POWER switch to CAMERA.
As indicated with ♪ in the illustrations, you can hear the beep sound to confirm your operation.

Type of differences

Model Number	System	Index	RC time code	Data code	Intelligent accessory shoe	Auto date	Remote commander
CCD-TR710	🄱 (quasi playback)	—	—	—	—	•	RMT-708
CCD-TR910	Hi🄱	•	•	•	•	—	RMT-715

Note on TV color systems

TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV.

Precaution on copyright

Television programes, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Precautions on camcorder care

- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or in a dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction, and sometimes this malfunction cannot be repaired [a].
- Do not let the camcorder get wet. Keep the camcorder away from rain and sea water. Letting the camcorder get wet may cause the unit to malfunction, and sometimes this malfunction cannot be repaired [b].
- Never leave the camcorder exposed to temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight [c].
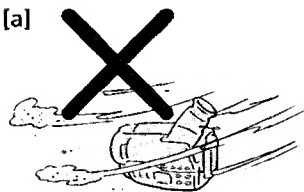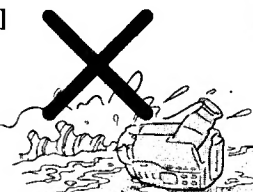
[a]   [b]   [c]
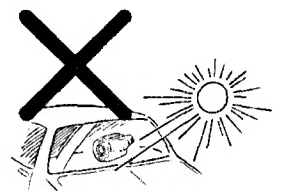
Checking supplied accessories

Check that the following accessories are supplied with your camcorder.

[1] RMT-715* RMT-708 or	[2]
[3]	[4] [5]
[6]	[7] [8]
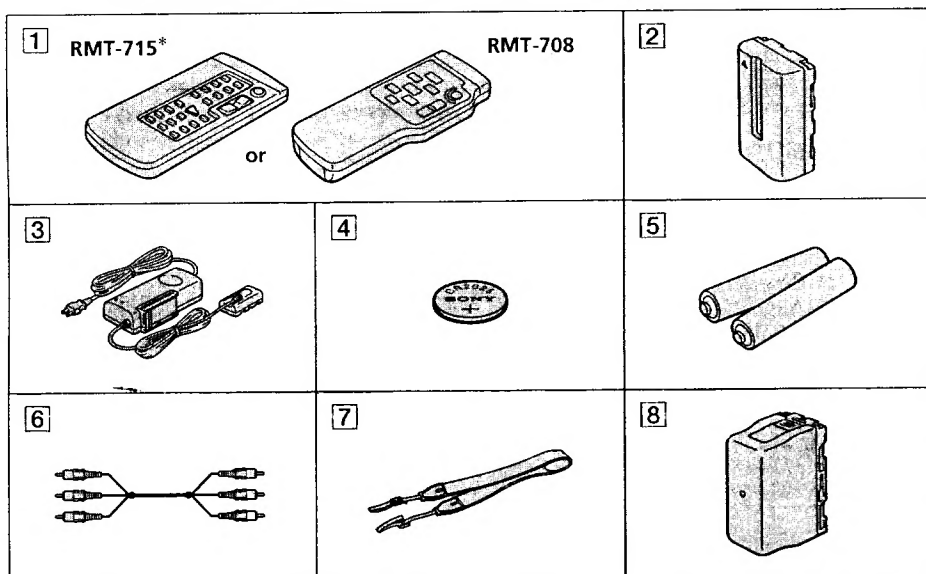
[1] **Wireless Remote Commander** (1) (p.75)
  * for Hi8 model

[2] **NP-FS30 Battery pack** (1) (p.6)

[3] **AC-V316 AC power adaptor** (1) (p.6, 21)

[4] **CR2025 Lithium Battery** (1) (p.56)
  The lithium battery is already installed in
  your camcorder.

[5] **Size AA (R6) battery for Remote
  Commander** (2) (p.75)

[6] **A/V connecting cable** (1) (p.16)

[7] **Shoulder strap** (1) (p.77)

[8] **Battery case** (1) (p.21)

> Contents of the recording cannot be compensated if recording or playback is not
> made due to a malfunction of the camcorder, video tape, etc.

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Charging and installing the battery pack

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC-V316 AC power adaptor.

This camcorder operates with the "InfoLITHIUM" battery labeled (i) *InfoLITHIUM* such as NP-F530/F730. If you use any other battery to operate your camcorder, the camcorder may not operate or the battery life may be shortened.

"InfoLITHIUM" is a trade mark of Sony Corporation.

Charging the battery pack

Charge the battery pack on a flat surface without vibration.
(1) Connect the power cord to a wall outlet.
(2) Align the surface of the battery pack indicated by the ▶ mark with the edge of the terminal shutter of the AC power adaptor. Then fit and slide the battery pack in the direction of the arrow. The CHARGE lamp (orange) lights up. Charging begins.
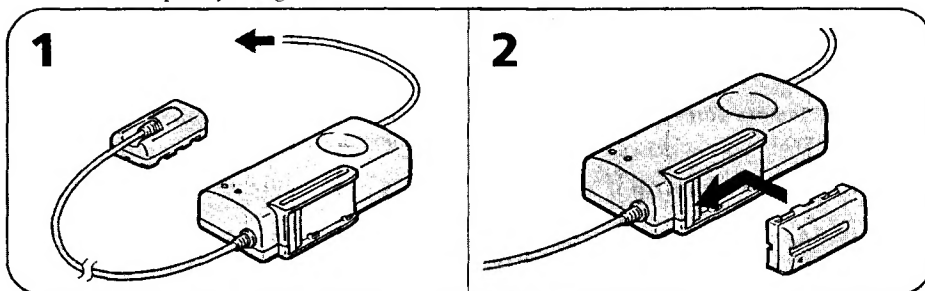When the CHARGE lamp goes out, **normal charge** is completed. For **full charge,** which allows you to use the battery longer than usual, leave the battery pack in place for approximately one hour. Unplug the unit from the wall outlet, then remove the battery pack and install it into the camcorder. You can also use the battery pack before it is completely charged.

Charging time

Battery pack	Charging time* (min.)
NP-F530 (supplied)	170 (110)
NP-F730	250 (190)

* Approximate minutes to charge an empty battery pack using the supplied AC power adaptor (full charge). (Lower temperatures require a longer charging time.)
The time required for a normal charge is indicated in parentheses.

Battery life

Battery pack	Continuous recording time* (min.)	Typical recording time** (min.)
NP-F530 (supplied)	120 (105)	70 (65)
NP-F730	270 (240)	160 (145)

Numbers before the parentheses indicate the time when you use a fully charged battery.
Numbers in parentheses indicate the time when you use a normal charged battery.
Battery life will be shorter if you use the camcorder in a cold environment.
* Approximate continuous recording time indoors.
** Approximate minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.

Note on remaining battery time indication during recording
When you use the InfoLITHIUM battery pack, remaining battery time is displayed in the viewfinder. However, the indication may not be displayed properly, depending on using conditions and circumstances.

To remove the battery pack
Slide the battery pack in the direction of the arrow.

AC-V316
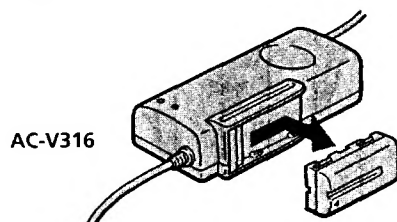
Notes on charging the battery pack
• The CHARGE lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
• If the CHARGE lamp does not light, disconnect the power cord. After about one minute, reconnect the power cord again.
• You cannot operate the camcorder using the AC power adaptor while charging the battery pack.
• When a fully charged battery pack is installed, the CHARGE lamp will light once, then go out.

Installing the battery pack

Align the prongs of the battery pack with the receptacles of the camcorder and slide the battery pack down until it catches on the battery release lever and clicks.
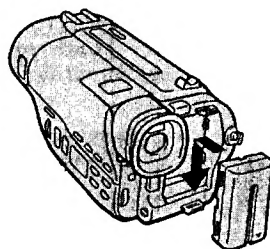
To remove the battery pack
While pressing the battery BATT (battery) PUSH button, slide the battery pack in the direction of the arrow.

BATT PUSH

7
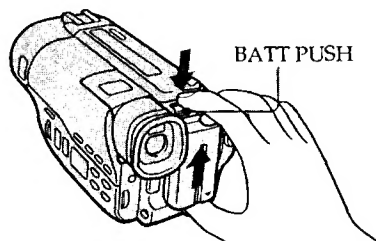
Using the camcorder with the finder slid out or lifted up

When NP-F730 is installed

When you install NP-F730, slide out the viewfinder for more comfortable camera recording.
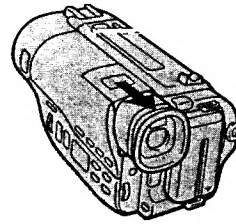
When you record in a low angle

Lift up the viewfinder.
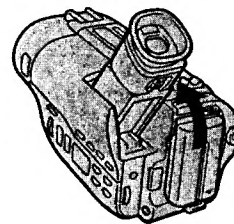
To restore the viewfinder

Push the viewfinder down or slide it into the camcorder.

8
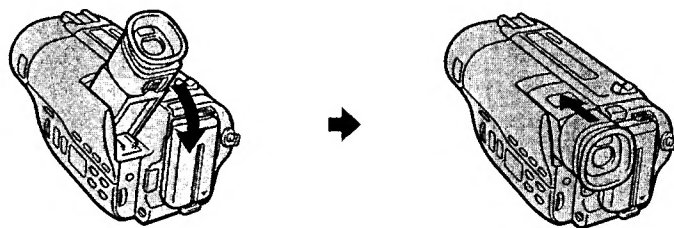
Inserting a cassette

Make sure that the power source is installed.
When you want to record in the Hi8 system, use Hi8 video cassette **Hi8** (CCD-TR910 only).

(1) While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow. The cassette compartment automatically lifts up and opens.

(2) Insert a cassette with the window facing out.

(3) Close the cassette compartment by pressing the "PUSH" mark on the cassette compartment. The cassette compartment automatically goes down.
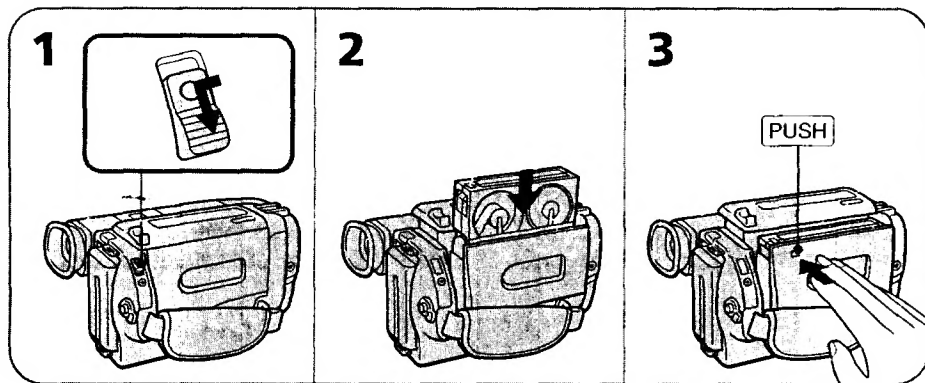
To eject the cassette
While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow.

To prevent accidental erasure
Slide the tab on the cassette to expose the red mark. If you insert the cassette with the red mark exposed and close the cassette compartment, the beeps sound for a while. If you try to record with the red mark exposed, the 🖸 and ▲ indicators flash in the viewfinder, and you cannot record.
To re-record on this tape, slide the tab back out covering the red mark.

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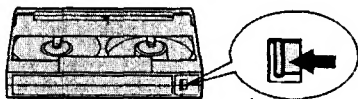
Camera recording

Make sure that the power source is installed, a cassette is inserted and that the START/
STOP MODE switch is set to ⚡. Before you record one-time events, you may want to
make a trial recording to make sure that the camcorder is working correctly.
When you use the camcorder for the first time, power on it and reset the date and time
to your time before you start recording. (p.57)
The date is automatically recorded for 10 seconds after you start recording (**AUTO
DATE feature**—CCD-TR710 only) This feature works only once a day.
To save battery power, the picture in the viewfinder appears only when you bring your
face close to the viewfinder with STANDBY up (**Finder power save**).
(1) While pressing the small green button on the POWER switch, set it to CAMERA.
(2) Turn STANDBY up.
(3) Press START/STOP. The camcorder starts recording. The "REC" indicator appears
and the red lamp lights up in the viewfinder. The camera recording/battery lamps
located on the front of the camcorder also lights up.
The AUTO DATE indicator appears. (CCD-TR710 only)
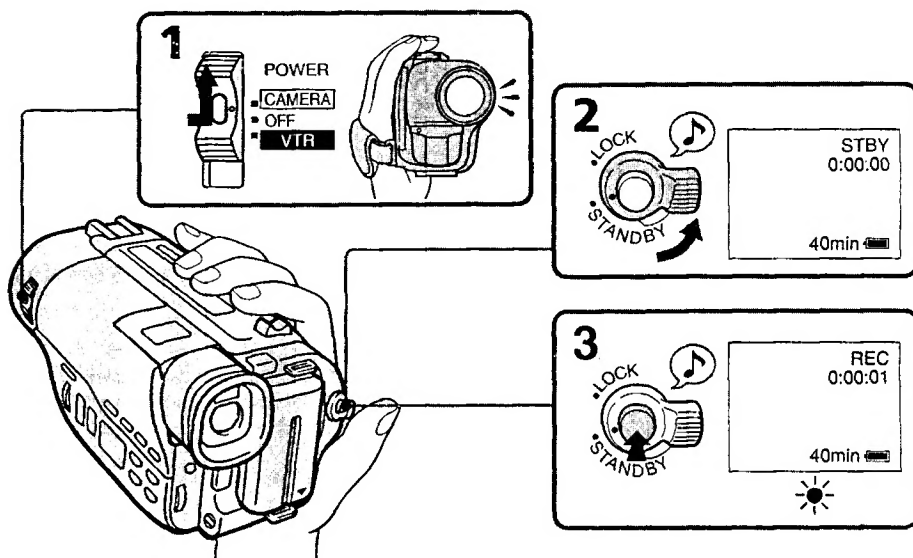
To stop recording momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder (**Standby mode**).

To finish recording [b]

Press START/STOP again. Turn STANDBY down and set the POWER switch to OFF. Then, eject the cassette and remove the battery pack.

[a]

STBY
0:35:20

40min

[b]
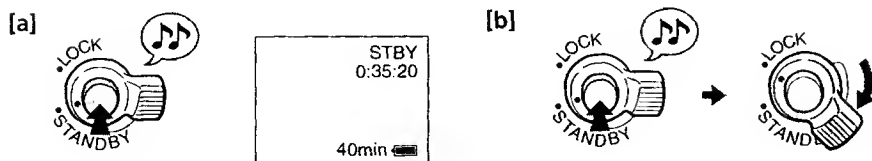
To focus the viewfinder lens

If you cannot see the indicators in the viewfinder clearly, or after someone else has used the camcorder, focus the viewfinder lens. Move the viewfinder lens adjustment lever so that the indicators in the viewfinder come into sharp focus.

STBY
0:00:00

40min

STBY
0:00:00

40min
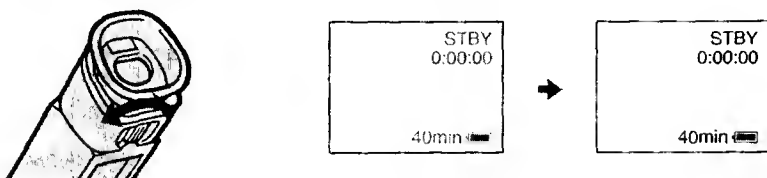
Note on Standby mode

If you leave the camcorder in Standby mode for 5 minutes while the cassette is inserted, the camcorder turns off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down and up again. To start recording, press START/STOP.

Notes on recording mode

• This camcorder records and plays back in SP (standard play) mode and in LP (long play) mode. However, when recording with the Hi8 system, you can record in SP mode only. The playback quality in LP mode will not be as good as that in SP mode.
• When a tape recorded on this camcorder in LP mode is played back on other types of 8mm camcorders or VCRs, the playback quality may not be as good as that on this camcorder.

Note on recording

When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you play back the tape.

Notes on the tape counter
• The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.
• If the tape is recorded in SP and LP modes mixed, the tape counter shows incorrect recording time. When you intend to edit the tape using the tape counter, record in same (SP or LP) mode.

Note on the beep sound
As indicated with ♪ in the illustration, a beep sounds when you turn the power on or when you start recording, and two beeps sound when you stop recording, confirming the operation. Several beeps also sound as a warning of any unusual condition of the camcorder.
Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, select "OFF" in the menu system.

Note on the AUTO DATE feature
—CCD-TR710 only
The clock is set to East Coast Standard Time at the factory. You can reset the clock in the menu system. You can change the AUTO DATE settings by selecting ON or OFF in the menu system. The AUTO DATE feature shows the date automatically once a day.
However, the date may automatically appear more than once a day when:
– you reset the date and time.
– you eject and insert the tape again.
– you stop recording within 10 seconds.
– you set AUTO DATE to OFF once and set it to ON again in the menu system.

Notes on finder power save
• The recording continues even when the picture in the viewfinder disappears during recording.
• If you set VF PW-SAVE to off in the menu system, the picture in the viewfinder does not disappear even when you turn your face away from the viewfinder.

When moving from indoors to outdoors (or vice versa)
Turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

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Using the zoom feature

Zooming is a recording technique that lets you change the size of the subject in the scene.
For more professional-looking recordings, use the zoom function sparingly.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears farther away)
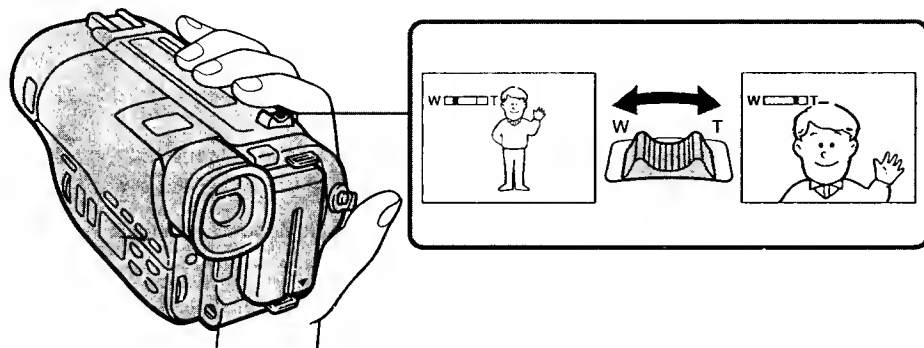
Zooming speed (Variable speed zooming)
Move the power zoom lever a little for a relatively slow zoom. To speed up the zooming, move the lever further.

When you shoot a subject using a telephoto zoom
If you cannot get a sharp focus while in extreme telephoto zoom, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 2 5/8 feet (about 80 cm) away from the lens surface in the telephoto position, or about 1/2 inch (about 1 cm) away in the wide-angle position.

Notes on digital zoom
• More than 15x zoom is performed digitally (30x), and the picture quality deteriorates as you go toward the "T" side. If you do not want to use the digital zoom, set the D ZOOM function to OFF in the menu system.
• The right side [a] of the power zoom indicator shows the digital zooming zone, and the left side [b] shows the optical zooming zone. If you set the D ZOOM function to OFF, the [a] zone disappears.

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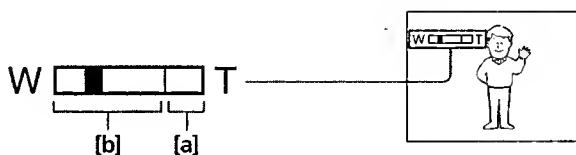
For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:
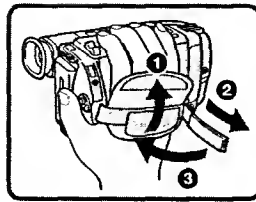
[a] [b]
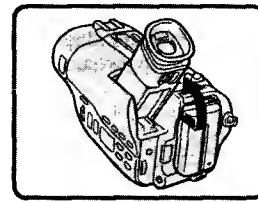
- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb [a].
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it. Be sure not to touch the built-in microphone.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting angle. Lift the viewfinder up for recording from a low position [b].

Place the camcorder on a flat surface or use a tripod

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder.
When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than $^9/_{32}$ inch (6.5 mm). Otherwise, the screw may damage the inner parts of the camcorder.

Cautions on the viewfinder

- Do not pick up the camcorder by the viewfinder [c].
- Do not place the camcorder so as to point the viewfinder toward the sun. The inside of the viewfinder may be damaged. Be careful when placing the camcorder under sunlight or by a window [d].
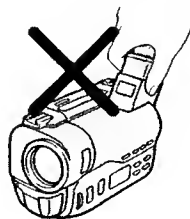
[c] [d]
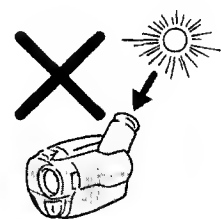
Note on the color viewfinder

- The color viewfinder employs LCD screen made with high-precision technology. However, black points or bright points of light (red, blue or green) may appear constantly on the color viewfinder screen. These points are not recorded on the tape. This is not a malfunction. (Effective dots: more than 99.99%)
- The finder power save function sometimes does not operate due to the effects of sunlight or flouressent light.
- In direct sunlight, the picture in the viewfinder looks brighter by the lighting aperture. The color of the picture in the viewfinder is variable in such a case.

Checking the recorded picture

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.

(1) While pressing the small green button on the POWER switch, set it to CAMERA.
(2) Turn STANDBY up.
(3) Press the – (⊖) side of EDITSEARCH momentarily; the last few seconds of the recorded portion play back **(Rec Review)**.

Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side **(Edit Search)**.
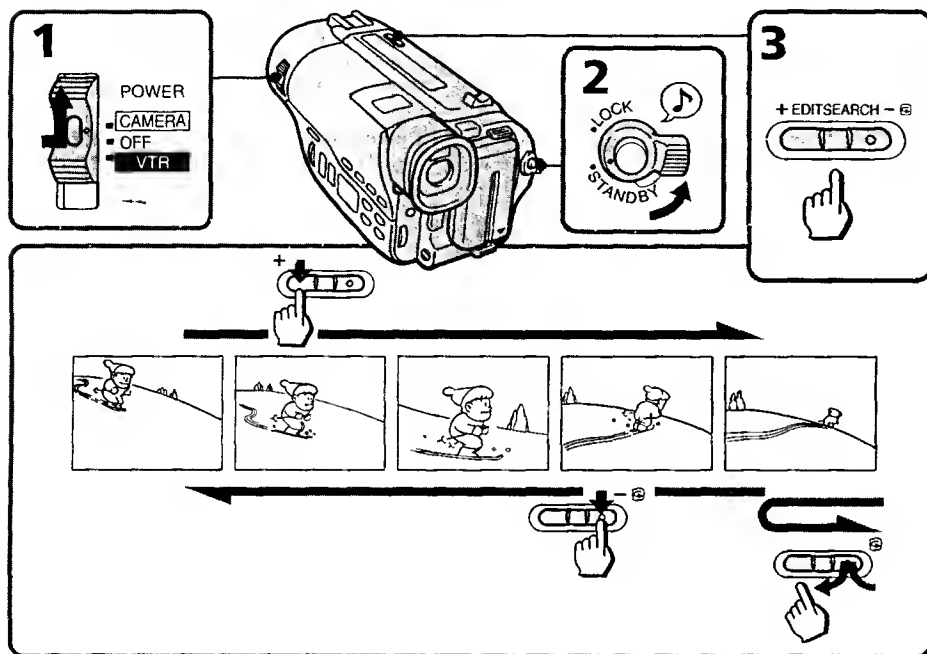
To stop playback
Release EDITSEARCH.

To begin re-recording
Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the cassette, the transition between the last scene you recorded and the next scene you record will be smooth.

Basic operations

You can use this camcorder as a VCR by connecting it to your TV for playback. There are some ways to connect the camcorder to your TV. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use house current for the power source.

Connecting directly to a VCR/TV with Video/Audio input jacks

When connecting the A/V connecting cable, make sure you connect the plugs to jacks of the same color.

If your TV is already connected to a VCR

Open the jack cover and connect the camcorder to the LINE IN inputs on the VCR by using the supplied A/V connecting cable. Set the input selector on the VCR to LINE. Set the TV/VCR selector on the TV to VCR.

If you are going to connect the camcorder using the S video cable (not supplied) [a], you do not need to connect the yellow (video) plug of the A/V connecting cable [b] (CCD-TR910 only).

: Signal flow
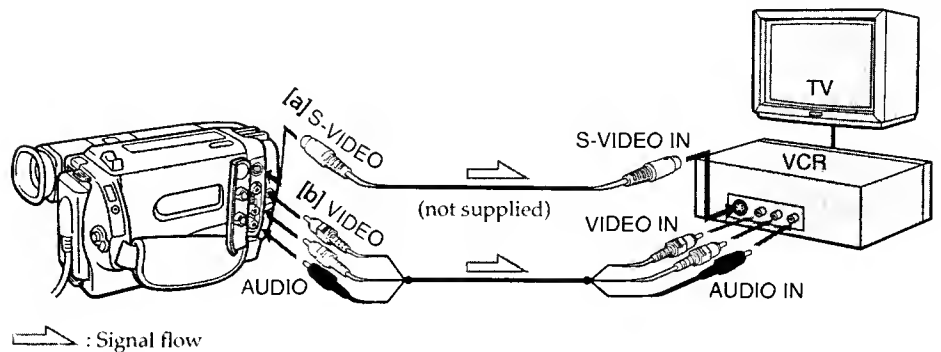
If you connect directly to TV

Open the jack cover and connect the camcorder to the inputs on the TV by using the supplied A/V connecting cable. Set the TV/VCR selector on the TV to VCR.
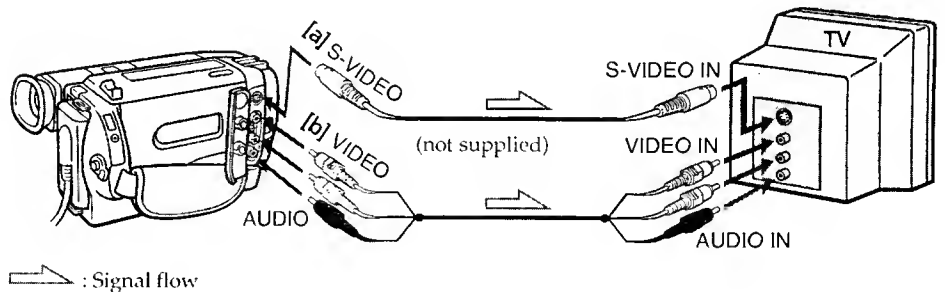
: Signal flow

If your VCR or TV is a monaural type

Connect only the white plug for audio on both the camcorder and the VCR or the TV. With this connection, the sound is monaural even on the stereo model.

To connect to a VCR or TV without Video/Audio input jacks

Use the RFU-95LC RFU adaptor (not supplied).

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You can monitor the playback picture in the viewfinder. You can also monitor a picture on a TV screen, after connecting the camcorder to a TV or VCR.

(1) While pressing the small green button on the POWER switch, set it to VTR. The tape transport buttons light up.

(2) Insert the recorded tape with the window facing out.

(3) Press ▷ to start playback.
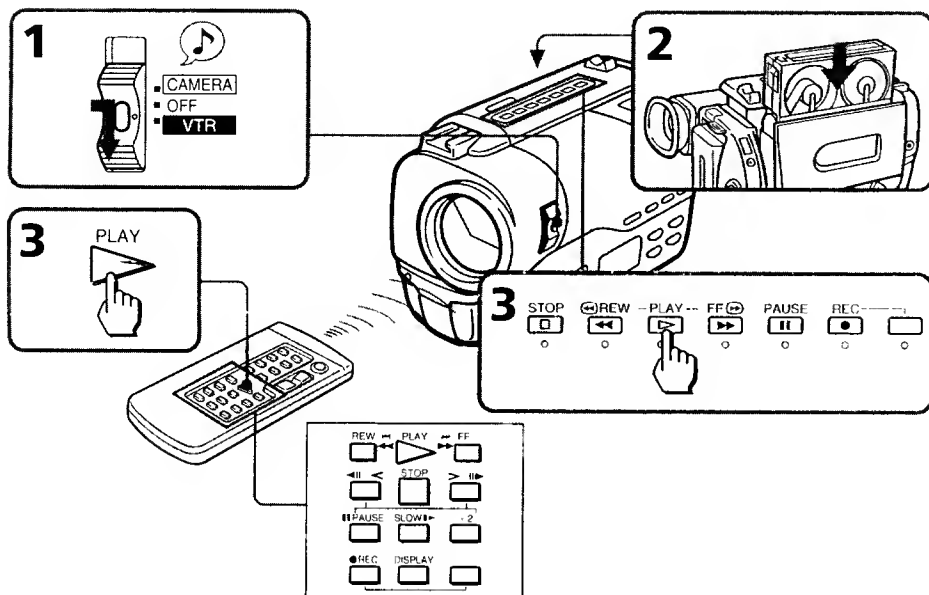
To stop playback, press □.
To rewind the tape, press ◄◄.
To fast-forward the tape rapidly, press ►►.

Using the remote commander

You can control playback using the supplied Remote Commander. Before using the Remote Commander, insert the size AA (R6) batteries.

To monitor the sound while viewing the playback picture in the viewfinder

Connect headphones (not supplied) to the ⌒ jack. (p.72)

Note on the lens cover

The lens cover does not open when the POWER switch is set to VTR. Do not open the lens cover manually. It may cause malfunction.

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Various playback modes

To view a still picture (playback pause)
Press **II** during playback. To resume playback, press **II** or ▷.

To locate a scene (picture search)
Keep pressing ◄◄ or ►► during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing the tape or rewinding (skip scan)
Keep pressing ◄◄ while rewinding or ►► while advancing the tape. To resume normal playback, press ▷.

To view the picture at 1/5 speed (slow playback)
Press SLOW **I►** on the Remote Commander during playback. To resume normal playback, press ▷. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

To view the picture at double speed (CCD-TR910 only)
For double speed playback in the reverse direction, press ◄II◄, then press x2 on the Remote Commander during playback. For double speed playback in the forward direction, press ►II►, then press x2 during playback. To resume normal playback, press ▷.

To view the picture frame-by-frame (CCD-TR910 only)
Press ◄II◄ or ►II► on the Remote Commander in playback pause mode. If you keep pressing the button, you can view the picture at 1/25 speed. To resume normal playback, press ▷.

To change the playback direction (CCD-TR910 only)
Press ◄II◄ on the Remote Commander for reverse direction or ►II► on the Remote Commander for forward direction during playback. To resume normal playback, press ▷.

To display the viewfinder screen indicators on the TV
Press DISPLAY on the Remote Commander. To erase the indicators, press DISPLAY again.

To select the playback sound
Change the "HiFi SOUND" mode setting in the menu system.

Notes on playback
• Streaks appear and the sound is muted in the various playback modes.
• When playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode.
• Horizontal noise appears at the center of the screen when you play back a tape in reverse if the RC time code (CCD-TR910 only) or the Data Code (CCD-TR910 only) is displayed on the screen. This is normal.
• You can play back the tapes recorded in the Hi8 video system though the function is very basic (CCD-TR710 only). You cannot get such finely detailed pictures as you could get with the video camera recorder with a Hi8 video system. Noise may result when you play back the tapes recorded in the Hi8 video system on the CCD-TR710 camcorder.

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Displaying the date or time when you recorded — data code function —CCD-TR910 only

Even if you did not record the date or time when you were recording, you can display the date or time when you recorded (Data Code) on the TV during playback or editing. The Data Code is also displayed in the viewfinder and the display window.

To display the date when you recorded

Press DATE on the camcorder, or press DATA CODE on the Remote Commander (CCD-TR910 only). To make the date disappear, press DATE again or DATA CODE twice.

DATA CODE

JUL. 4 1996

5:30:00 PM

DATE

JUL. 4 1996

TIME

5:30:00 PM
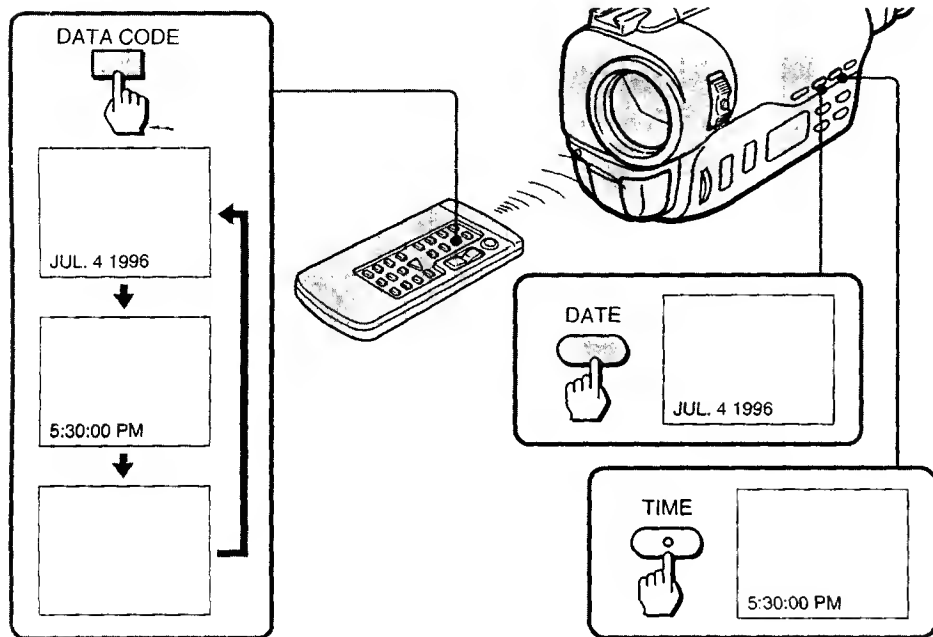
To display the time when you recorded

Press TIME on the camcorder, or press DATA CODE on the Remote Commander (CCD-TR910 only) twice. To make the time disappear, press it again.

When bars (--:--:--) appear
• A blank portion of the tape is being played back.
• The tape was recorded by a camcorder without the Data Code function.
• The tape was recorded by a camcorder without having date and time set.
• The tape is unreadable due to tape damage or noise.
• The tape was recorded in LP mode.
• The tape is being played back in variable speed (Slow Playback, etc.)
• An index signal is marked, the RC time code is written, or PCM after recording is made on the tape.

19

Using alternative power sources

You can choose any of the following power sources for your camcorder: battery pack, and the house current. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	Supplied AC power adaptor
Outdoors	Battery pack	InfoLITHIUM battery pack NP-F530 (supplied), NP-F730

Note on power sources
Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape. If this happens, restore the power supply again immediately.

Using the house current

To use the supplied AC power adaptor:
(1)Connect the AC power cord to a wall outlet.
(2)Slide the connecting plate down into the guides at the rear of the camcorder until it clicks.
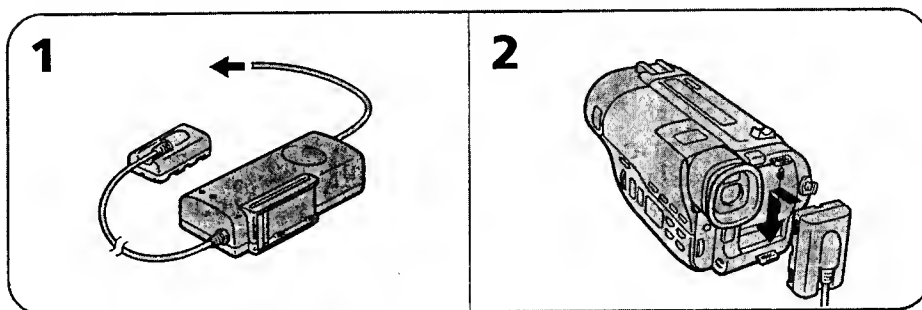
Notes on the VTR/CAMERA lamp
• The VTR/CAMERA lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
• If the VTR/CAMERA lamp does not light, disconnect the power cord. After about one minute, reconnect the power cord.

To remove the connecting plate
Pull out the connecting plate by the plate. Never pull the connecting cord itself.

WARNING
The power cord must only be changed at a qualified service shop.

PRECAUTION
The set is not disconnected from the AC power source (house current) as long as it is connected to the wall outlet, even if the set itself has been turned off.

Using the Battery Case

Use the battery case (supplied) and six LR6 (size AA) Sony Alkaline batteries (not supplied).
(1) Remove the battery holder from the battery case.
(2) Insert six new alkaline batteries into the battery holder, following the marking on the holder to be sure the batteries are installed in the correct direction.
(3) Insert the battery holder with the alkaline batteries.
(4) Insert the battery case with the alkaline batteries to the battery mounting surface of the camcorder in the same way as the battery pack (p.7).
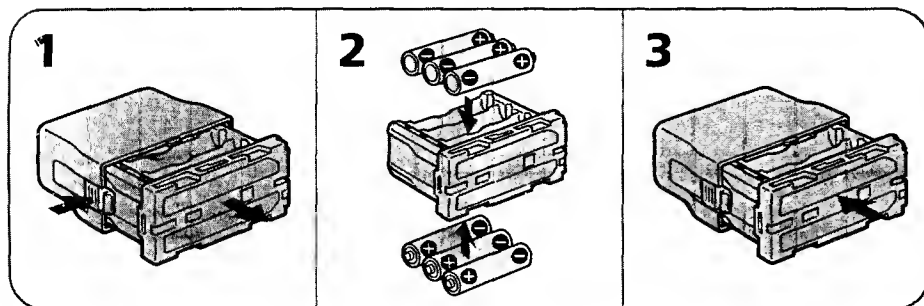
Battery Life
Using alkaline batteries at 77°F (25°C).

Model	Continuous recording time	Typical recording time
CCD-TR910	135 min.	80 min.
CCD-TR710	135 min.	80 min.

Notes
• The battery life may be shorter depending on the using environment.
• The above battery lives are estimates. The battery life may be shorter depending on the storage condition of the battery before being purchased and temperature.
• You may not use the battery case in cold environment.

To remove the battery case
The battery case is removed in the same way as the battery pack (p.7).
When you replace the batteries, be sure to remove the battery case from the camcorder to prevent malfunction.

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Changing the mode settings

You can change the mode settings in the menu system to further enjoy the features and functions of the camcorder.

(1) Press MENU to display the menu.
(2) Turn the control dial so that the desired item is highlighted white.
(3) Press the control dial. The setting menu appears.
(4) Turn the control dial to highlight a setting, and press the control dial to select it.
(5) If you want to change the other modes, repeat steps 2 to 4.
(6) Press MENU to erase the menu display.
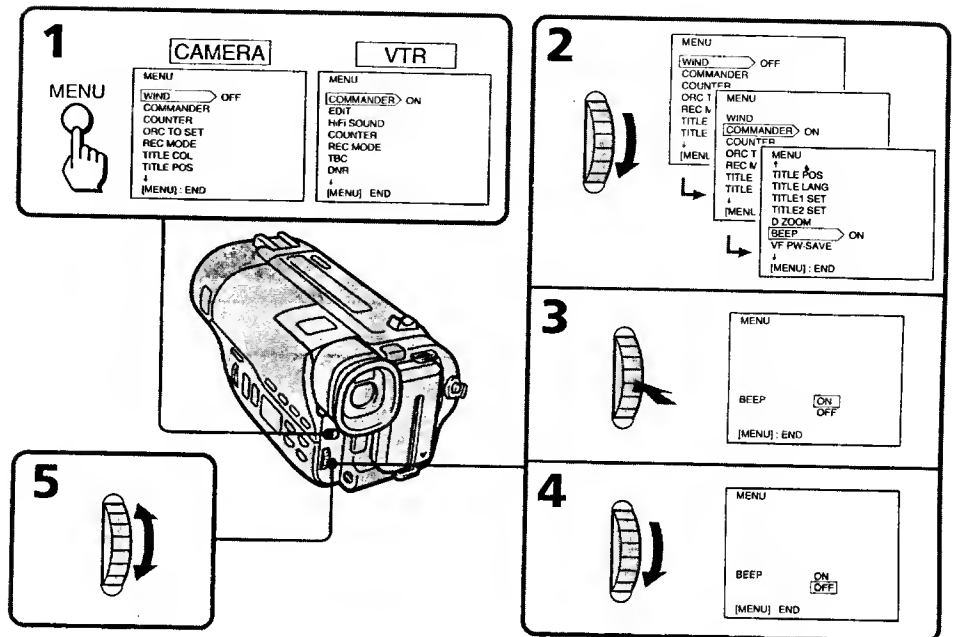
Selecting the mode setting of each item

Items for both CAMERA and VTR modes
COUNTER* <NORMAL/TIME CODE> (CCD-TR910 only)
- Normally select NORMAL.
- Select TIME CODE to display the RC time code in order to edit more precisely. Even if the battery is disconnected from the camcorder, the RC Time code is not canceled.

COMMANDER <ON/OFF>
- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander.

BEEP* <ON/OFF>
- Select ON so that beeps sound when you start/stop recording, etc.
- Select OFF when you do not want to hear the beep sound.

VF PW-SAVE* <ON/OFF>
- Select ON so that the picture in the viewfinder appears only when you bring your face close to the viewfinder.
- Select OFF when you want to display the picture in the viewfinder all the time.

REC MODE* <SP/LP>
- Select SP when recording in SP (standard play) mode.
- Select LP when recording in LP (long play) mode.
  When recording with the Hi8 system, you cannot record in LP (long play) mode.

Items for CAMERA mode only
WIND <ON/OFF>
- Select ON to reduce wind noise when recording in strong wind.
- Normally select OFF.

ORC TO SET* <ORC ON>
Select this item and press the START/STOP button to automatically adjust the recording condition to get the best possible recording. If you have already perform this function, "ORC ON" is displayed.

D ZOOM* <ON/OFF>
- Select ON to activate digital zooming.
- Select OFF to not use the digital zoom. The camera goes back to 15x zoom.

AUTO DATE* <ON/OFF> (CCD-TR710 only)
- Select ON to record the date for 10 seconds after recording has started.
- Select OFF to not record the date.

REC LAMP* <ON/OFF>
- Select OFF when you do not want the camera recording/battery lamp at the front of the unit to light up.
- Normally select ON.

TITLE COL* <WHITE/YELLOW/VIOLET/RED/CYAN/GREEN/BLUE>
Select the color of the title.

Advanced Operations

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TITLE POS* <CENTER/BOTTOM>
• Select CENTER to center the title in the picture.
• Select BOTTOM to position the title at the bottom of the picture.

TITLE LANG* <ENGLISH/ FRANÇAIS/ ESPAÑOL/ PORTUGUÊS>
Select the language of the preset titles.

TITLE 1 SET* TITLE 2 SET*
Select to store your own original titles.

CLOCK SET*
Select this item to reset the date or time.

Items for VTR mode only
EDIT <ON/OFF>
• Select ON to minimize picture deterioration when editing.
• Normally select OFF.

HiFi SOUND <STEREO/1/2>
• Normally select STEREO.
• Select 1 or 2 to play back a dual sound track tape.

TBC* <ON/OFF> (CCD-TR910 only)
• Select ON to correct for jitter.
• Select OFF not to correct for jitter.
  When you use an old tape on which video games images have been recorded or which has been recorded over many times, set TBC to OFF.

DNR* <ON/OFF> (CCD-TR910 only)
• Select ON to reduce picture noise.
• Select OFF not to reduce noise.
  If you mind afterimages crated by shooting a rapid moving subject, we recommend selecting the OFF function.

* These settings are retained even when the battery is removed, as long as the lithium battery is in place.

Fade-in and fade-out

You can fade in or out to give your recording a professional appearance.
When fading in, the picture gradually fades in from black or mosaic while the sound increases. When fading out, the picture gradually fades to black or mosaic while the sound decreases.

When fading in [a]
(1) While the camcorder is in Standby mode, press FADER. The fade indicator starts flashing.
(2) Press START/STOP to start recording. The fade indicator stops flashing.

When fading out [b]
(1) During recording, press FADER. The fade indicator starts flashing.
(2) Press START/STOP to stop recording. The fade indicator stops flashing, and then recording stops.

[a]

FADER

M.FADER

[b]

1 FADER

2
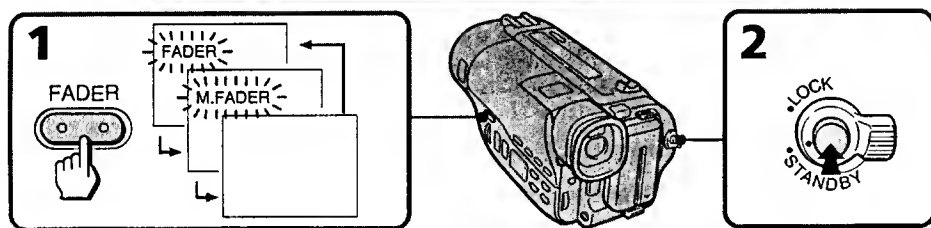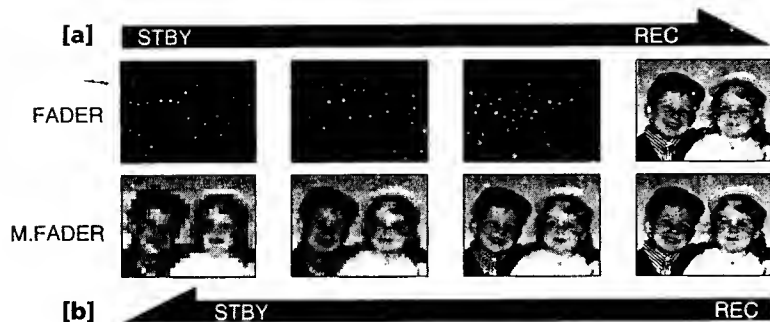
To cancel the fade-in/fade-out function
Before pressing START/STOP, press FADER until the fade indicator disappears.

When the date or time indicator is displayed
The date or time indicator does not fade in or fade out.

When the title is displayed
You cannot use the FADER function. When FADER is set, you cannot superimpose a title.

When START/STOP MODE switch is set to 5 SEC or $\underline{\pm}$
You cannot use the FADER function.

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Using the wide mode function

You can record a cinemalike picture (CINEMA) or a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9 FULL).
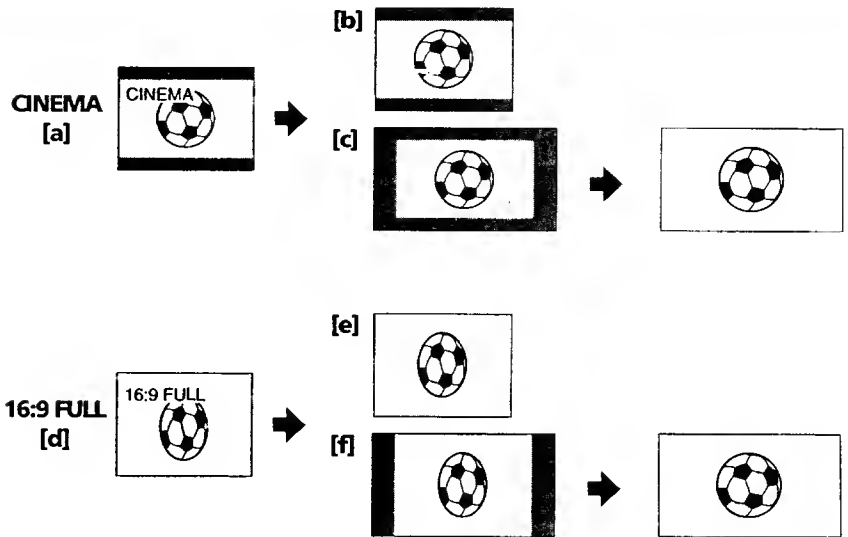
CINEMA

Black bands appear at the top and the bottom of the screen, and the viewfinder [a] and a normal TV screen [b] look wide. You can also watch the picture without black bands on a wide-screen TV [c]. When you choose the CINEMA mode, DATE, TIME and the battery indicators are displayed above.

16:9 FULL

The picture in the viewfinder [d] or on a normal TV [e] is horizontally compressed. You can watch the picture of normal images on a wide-screen TV [f].

Using the wide mode function

While the camcorder is in Standby mode, press 16:9 WIDE repeatedly so that the desired mode indicator appears in viewfinder. While recording you cannot change the mode.

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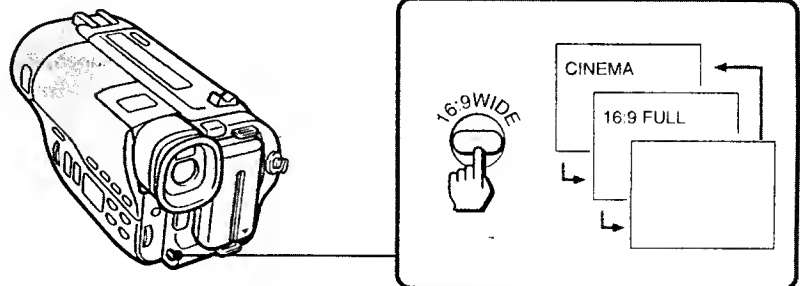
To cancel wide mode
Press 16:9 WIDE repeatedly until the wide mode indicator disappears.

To watch the tape recorded in wide mode
To watch the tape recorded in CINEMA mode, set the screen mode of the wide-screen TV to zoom mode. To watch the tape recorded in 16:9 FULL mode, set it to full mode. For details, refer to the instruction manual of your TV.
Note that the picture recorded in 16:9 FULL mode looks compressed on a normal TV.

Notes on wide mode
• If wide mode is set to 16:9 FULL, the Steady Shot function does not work and the " 🅣 " indicator flashes.
• When you record in 16:9 FULL mode, the date or time indicator will be widened on the wide-screen TV.
• If you dub a tape, the tape is copied in the same mode as the original recording.
• The wide mode is canceled automatically 5 minutes after you remove the power source.
• When recording, you cannot change the mode. (While the camcorder is in Standby mode, you can change the mode.)

When you connect the camcorder to a video ID system (ID-1) TV
The picture changes to the wide mode automatically when you play a video tape recorded in wide mode.

Enjoying picture effect

Selecting picture effect

You can make pictures like those of television with the Picture Effect function.

[a] [b] [c] [d] [e] [f]
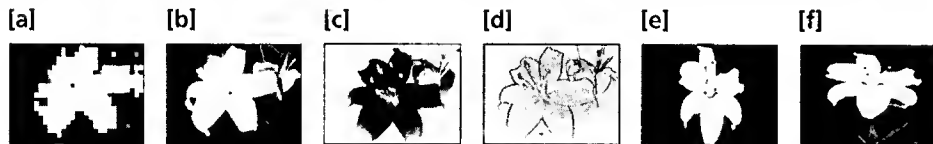
MOSAIC [a]
The picture is mosaic.

SOLARIZE [b]
The light intensity is more clear, and the picture looks like an illustration.

B&W
The picture is monochrome (black and white).

SEPIA
The picture is sepia.

NEG. ART [c]
The picture is reversed.

PASTEL [d]
Emphasizes contrast and gives the picture animation-like colors.

SLIM [e]
The picture expands vertically.

STRETCH [f]
The picture expands horizontally.

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Using picture effect function

(1)Press PICTURE EFFECT to display the Picture Effect menu.
(2)Turn the control dial to highlight a picture effect.
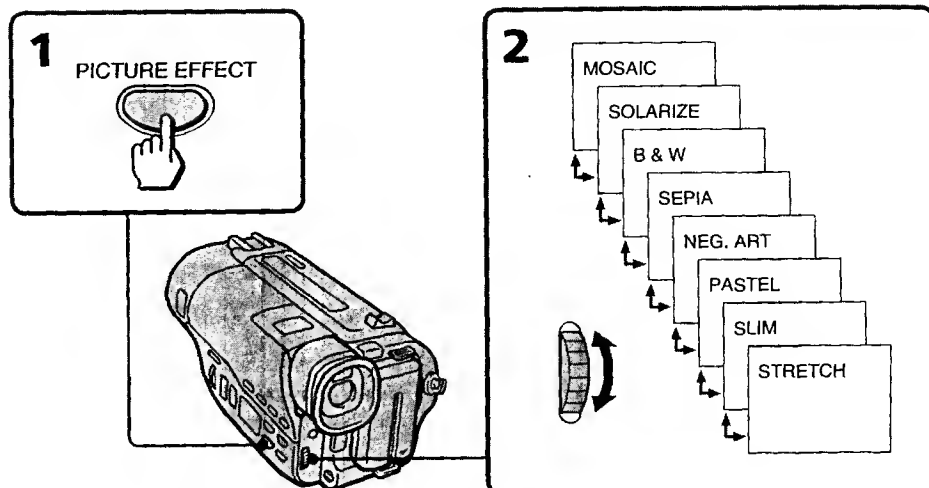
To turn off picture effect

Press PICTURE EFFECT. The indicator in the viewfinder goes out.

Note on the picture effect

• The Picture Efect menu cycle as follows: MOSAIC ↔ SOLARIZE ↔ B&W ↔ SEPIA ↔ NEG.ART ↔ PASTEL ↔ SLIM ↔ STRETCH
• When you turn the power off, the camcorder returns automatically to normal mode.

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Focusing manually

When to use manual focus

In the following cases you should obtain better results by adjusting the focus manually.
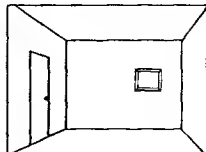
[a] [b] [c] [d]

- Insufficient light **[a]**
- Subjects with little contrast – walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting the light
- Shooting a stationary subject when using a tripod

Advanced Operations

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Focusing manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length.

(1) Set FOCUS to MANUAL. The ⚆ indicator appears in the viewfinder.

(2) Move the power zoom lever to the "T" side until the lever reaches the end.

(3) Turn the FAR/NEAR dial to achieve a sharp focus. Be sure not to touch the built-in microphone when you turn the FAR/NEAR dial.

(4) Set the desired shot length using the power zoom lever.
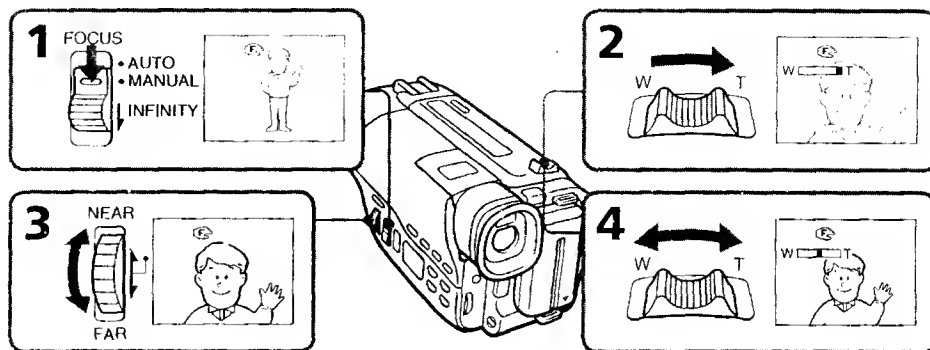
To return to autofocus mode

Set FOCUS to AUTO. The ⚆ indicator in the viewfinder disappears.

Shooting in relatively dark places

Shoot at wide-angle after focusing in the telephoto position.

To record a very distant subject

Push FOCUS down to INFINITY. The lens focuses on the most distant subject while FOCUS is held down. When it is released, manual focus mode is resumed.

Use this function when shooting through a window or a screen, to focus on a most distant subject.

Note on manual focusing

The ⚆ indicator changes to the following indicator:

▲ : When recording a very distant subject.

♣ : When there is something too close to focus on.

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Using the PROGRAM AE function

You can select from six PROGRAM AE (Auto Exposure) modes to suit your shooting situation.

Selecting the best mode

Select one of six modes, referring to the following.
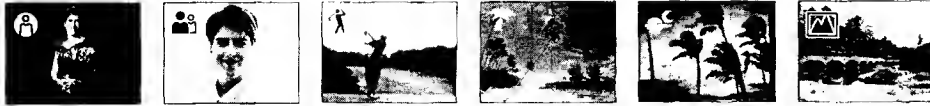
ⓐ Spotlight mode

For subjects in spotlight, such as at the theater or a formal event.

⚇ Soft Portrait mode

For zooming in on a still subject in telephoto mode, or for a subject behind an obstacle such as a screen. Creates a soft background for subjects such as people or flowers, and faithfully reproduces skin color.

𝄤 Sports Lesson mode

For recording fast-moving subjects such as in tennis or golf games.

𝆕 Beach & Ski mode

For people or faces in strong light or reflected light, such as at a beach in midsummer or on a skiing ground.

⇐ Sunset & Moon mode

For recording subjects in dark environments such as sunsets, fireworks, neon signs, or general night views.

⛰ Landscape mode

For distant subjects (more than 10 meters away) such as mountains or when recording a subjct behind an obstacle such as a window or screen.

While selecting spotlight mode, sports lesson mode or beach & ski mode

The camcorder automatically controls the auto focus function not to focus on close subject.

While selecting sunset mode or landscape mode

The camcorder automatically controls the auto focus function to focus on a distant view.

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(1) Press PROGRAM AE.
(2) Turn the control dial to select the desired PROGRAM AE mode.
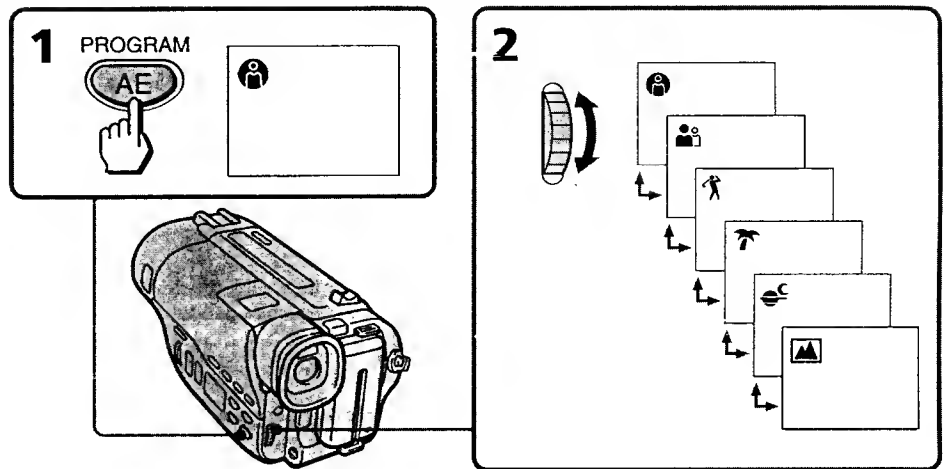
To turn off program AE
Press PROGRAM AE.

Note on shutter speed
The shutter speed in each PROGRAM AE mode is as follows:
Soft portrait mode — from 1/60 to 1/500
Sports lesson mode — from 1/250 to 1/4000
Beach & ski mode — from 1/60 to 1/250

When program AE is functioning
You can adjust the exposure.

Shooting with backlighting

When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.

Press BACK LIGHT. The ⊠ indicator appears in the viewfinder.
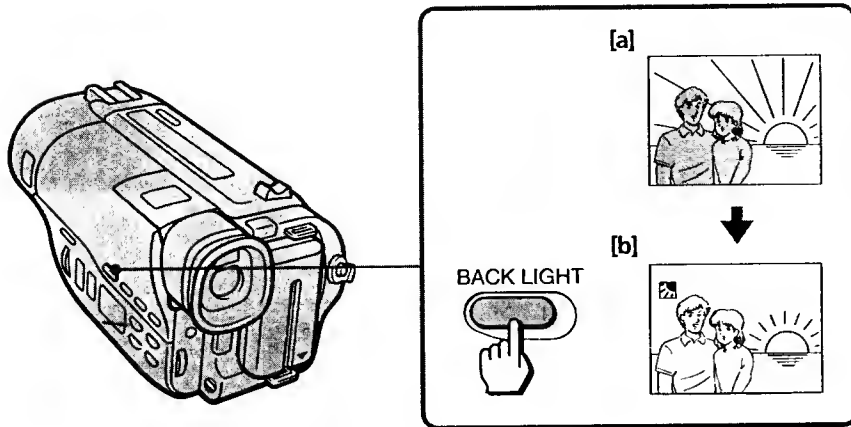
[a] Subject is too dark because of backlight.
[b] Subject becomes bright with backlight compensation.

After shooting
Be sure to release this adjustment condition by pressing BACK LIGHT again. The ⊠ indicator disappears. Otherwise, the picture will be too bright under normal lighting conditions.

This function is also effective under the following conditions:
• On snow, e.g. at a ski resort
• At the beach under strong sunshine
• A subject with a light source nearby or a mirror reflecting light
• A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

When you press the EXPOSURE button
The BACK LIGHT function is canceled.

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Adjusting the exposure

When you shoot in a snowfield or on a beach in the mid-summer and the subject may become dark because of the extreme brightness, you can change the brightness of the picture. You can also use this function when the subject is too bright-subjects on stages, night views, etc.

[a]

[b]

[a] Turn the control dial up when:
• The background is too bright (back lighting)
• Insufficient light: most of the picture is dark

[b] Turn the control dial down when:
• Bright subject and dark background
• To record the darkness faithfully

Adjusting the exposure

(1) Press EXPOUSURE.
(2) Turn the control dial to adjust the brightness.

1 EXPOSURE

2
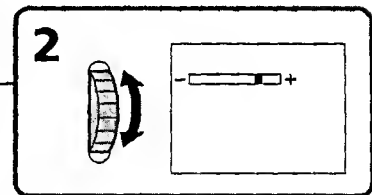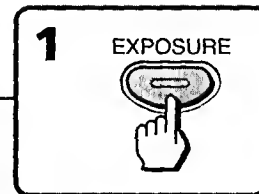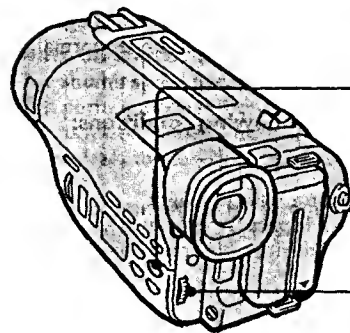
To return to automatic exposure mode
Press EXPOSURE again.

Shooting with the sun behind you
If the light source is behind your subject, or in the following situations, the subject will be recorded too dark.
• The subject is indoors and there is a window behind the subject.
• Bright light sources are included in the scene.
• When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

Shooting in the dark

We recommend you to use a video light (not supplied). To get the best color, you must maintain a sufficient light level.

When you adjust the exposure manually
- BACK LIGHT does not operate.
- Manual adjustment of exposure returns to automatic exposure mode when you press the PROGRAM AE button.

Releasing the STEADY SHOT function

When you shoot, the '⊙' indicator appears in the viewfinder. This indicates that the Steady Shot function is working and the camcorder compensates for camera-shake.

You can release the Steady Shot function when you do not need to use the Steady Shot function. Do not use the Steady Shot function when shooting a stationary object with a tripod.

Set STEADY SHOT to OFF.
The '⊙' indicator disappears.
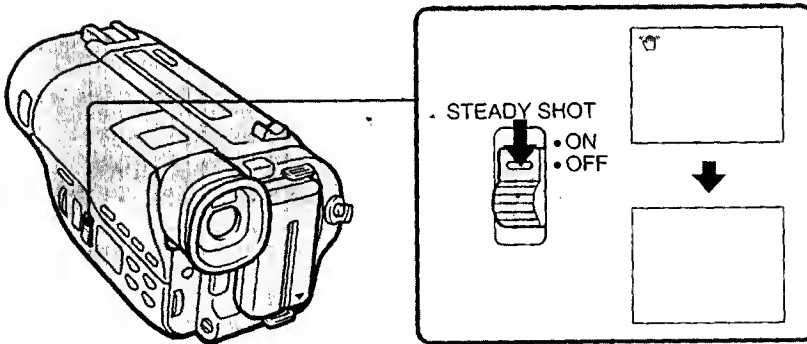
To activate the Steady Shot function again
Set STEADY SHOT to ON.
The '⊙' indicator appears.

Notes on the Steady Shot function
- The Steady Shot function will not correct excessive camera-shake.
- When you switch the Steady Shot function on or off, the exposure may fluctuate.
- The Steady Shot function does not operate when you select the 16:9 FULL mode.

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You can select one of eight preset titles. You can also select the language, position, and color of titles in the menu system.

Selecting the language

(1) While the camcorder is in Standby mode, press MENU to display the menu.
(2) Turn the control dial to select TITLE LANG and press the control dial to select it. The language menu apperas.
(3) Turn the control dial to highlight a language, and press the control dial to select it.
(4) Press MENU to erase the menu display.
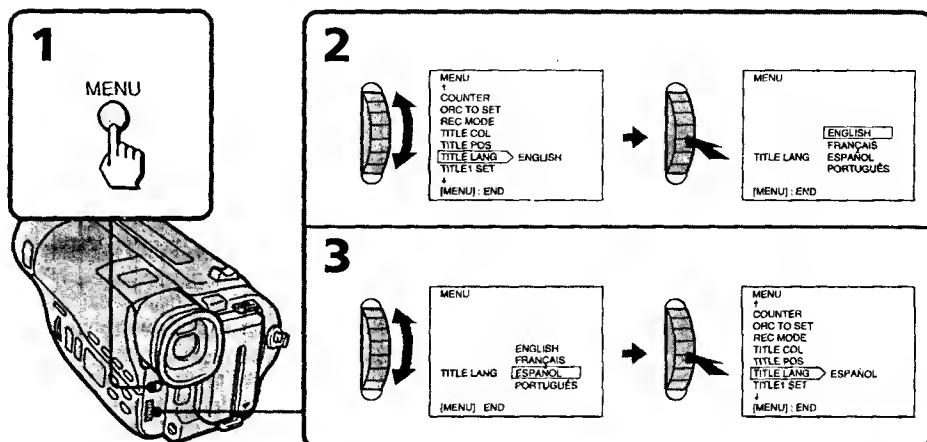
Using titles

To add the title from the beginning

(1) While the camcorder is in Standby mode, press TITLE repeatedly until the desired title appears.
Each time a new title appears, it flashes. When the desired title appears, wait for it to stop flashing.
Titles cycle as follows:
Original title 1 → Original title 2 → HELLO! → HAPPY BIRTHDAY → HAPPY HOLIDAYS → CONGRATULATIONS! → OUR SWEET BABY → WEDDING → VACATION → THE END
After "THE END" the title indicator goes off once and returns to Original title 1 again.
(2) Press START/STOP to start recording.
(3) When you want to stop recording the title, press TITLE.

If you have not stored any original titles
The titles begin from "HELLO!".

Note on titles
The contents and the order of titles are different depending on the languages.

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To add the title while you are recording

(1) While the camcorder is in Standby mode, press TITLE repeatedly until the desired title appears.
Each time a new title appears, it flashes.
(2) When the desired title appears, wait for it to stop flashing, and press TITLE again to erase the title from the display.
(3) Press START/STOP to start recording.
(4) When you reach the point where you want to add the title, press TITLE.
(5) When you want to stop recording the title, press TITLE again.
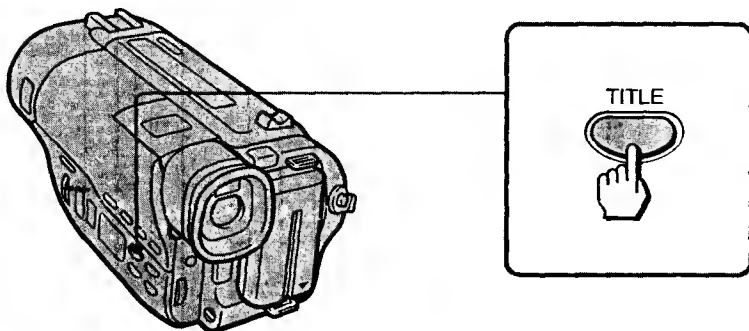
Notes on superimposing a title

- You cannot select a title while you are recording.
- FADER does not work while the title is displayed.
- A title, a date and time cannot be recorded at the same time.
- When fading in or out you cannot display a title.
- If you display the menu while superimposing a title, the title is not recorded while the menu is being displayed.

To select the color of the title

(1) While the camcorder is in Standby mode, press MENU to display the menu.
(2) Turn the control dial to select TITLE COL and press the control dial to select it.
The color menu appears.
(3) Turn the control dial to highlight a color, and press the control dial to select it.
You can choose from the following 7 colors:
WHITE ←→ YELLOW ←→ VIOLET ←→ RED ←→ CYAN ←→ GREEN ←→ BLUE
(4) Press MENU to erase the menu display.

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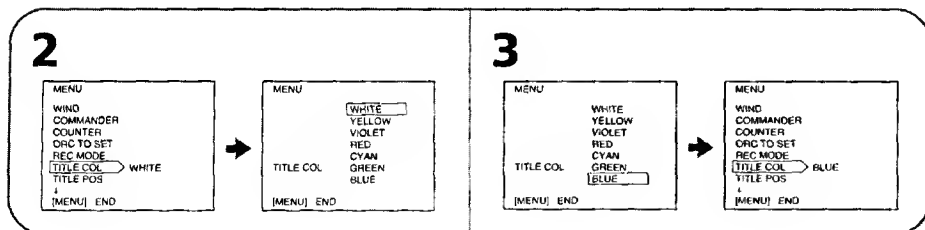
To select the position of the title

(1) While the camcorder is in Standby mode, press MENU to display the menu in the viewfinder.

(2) Turn the control dial to select TITLE POS and press the control dial to select it. The position menu appears.

(3) Turn the control dial to highlight CENTER or BOTTOM, and press the control dial to select it.
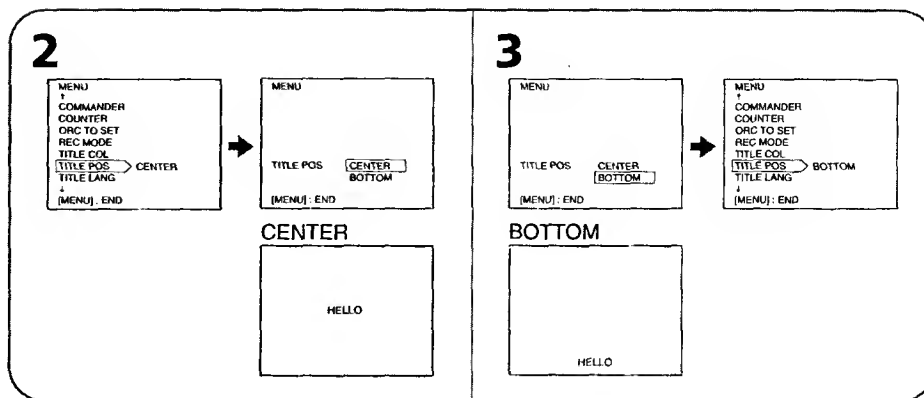
(4) Press MENU to erase the menu display.

You can make up to two titles and store them in the camcorder. Eject the cassette before you begin. Your title can have up to 22 letters.
(1) While the camcorder is in Standby mode, press MENU to display the menu.
(2) Turn the control dial to select TITLE 1 SET or TITLE 2 SET and press the control dial to select it.
(3) Turn the control dial to highlight a letter, and press the control dial to select it.
(4) Repeat step 3 until you finish the title.
(5) When you are finished, turn the control dial to highlight ↵ and press control dial to select it.
The title is stored.
(6) Press MENU to erase the menu display.
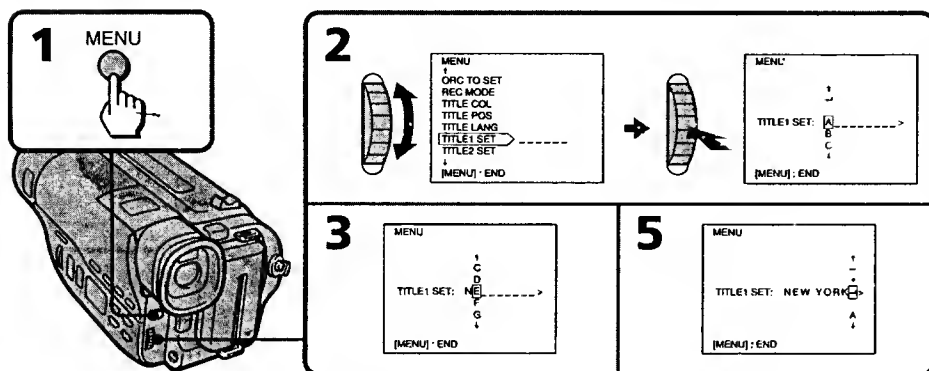
To edit a title you have stored
In step 2, select TITLE 1 SET or TITLE 2 SET, whichever title you want to edit is stored in. Then change the title.

Instead of selecting ↵ in step 5 to store the title
You can do one of the following:
• Enter 22 letters.
• Press MENU.

If you do nothing more than 5 minutes while a cassette is in the camcorder
The power goes off automatically. Turn STANDBY down once, turn it again up and proceed from step 1.

When you enter 22 letters in step 4
The title is stored automatically. (You do not need to go to step 5.)

To delete a title
At the leftmost character position, select ↵ and press the control dial. Do not erase the title by selecting empty spaces. If you do so, a title full of empty spaces is stored.

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Before you start recording or during recording, press DATE or TIME. You can record the date or time displayed in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator in the viewfinder is recorded.

The clock is already set to East Coast Standard Time at the factory. You can reset the clock in the menu system.
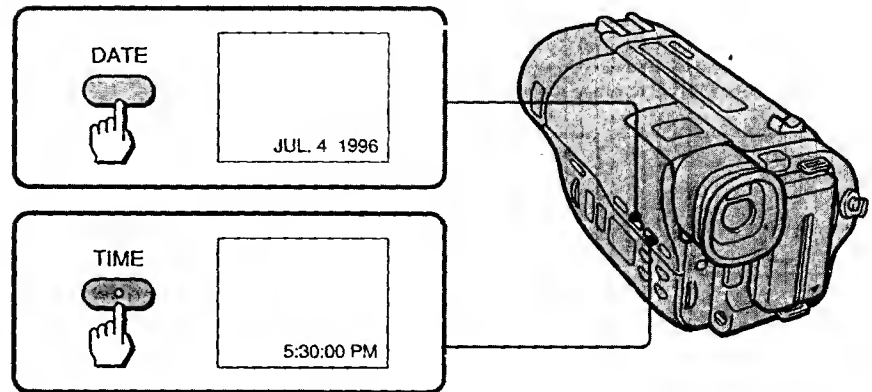
To stop recording with the date or time

Press DATE or TIME again. The date or time indicator disappears. The recording continues.

You can insert a scene in the middle of a recorded tape by setting the starting and ending points. The previous recorded portion will be erased. If the RC time code appears in the viewfinder, set COUNTER to NORMAL in the menu system to display the tape counter.

(1) While the camcorder is in Standby mode, keep pressing the + (forward playback) or – (reverse playback) side of EDITSEARCH, and release the button where you want to end the insertion [b]. The camcorder enters Standby mode again.

(2) Press COUNTER RESET. The counter resets to zero.

(3) Keep pressing the – side of EDITSEARCH and release the button at the point where you want to start the insertion [a].

(4) Press ZERO MEM on the Remote Commander. The ZERO MEM indicator flashes.

(5) Press START/STOP to start recording. The recording stops automatically at the counter zero point.

Advanced Operations
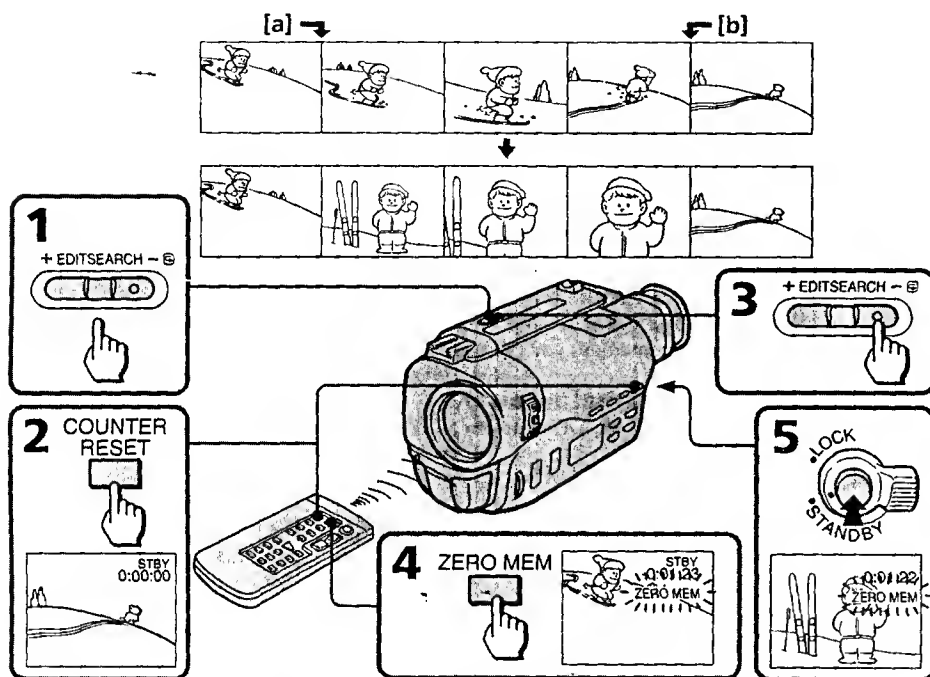
To change the end point
Press ZERO MEM to erase the ZERO MEM indicator, then repeat steps 2 to 5.

Note on re-recording
The picture and the sound may be distorted at the end of the inserted portion when it is played back.

Your camcorder has two modes besides normal start/stop mode. These modes enable you to take a series of quick shots resulting in a lively video.

(1) Set the START/STOP MODE switch to the desired mode.

  ⌚: Recording starts when you press START/STOP, and stops when you press it again (normal mode).

  ⌚: The camcorder records only while you press down START/STOP.

  5 SEC: When you press START/STOP, the camcorder records for 5 seconds and then stops automatically.

(2) Turn STANDBY up and press START/STOP. Recording starts.

If you selected 5 SEC, five dots appear in the viewfinder. The dots disappear at a rate of one per second. When five seconds elapse and all the dots disappear, the camcorder switches to Standby mode automatically.

If you select ⌚, the camcorder records as long as you hold down START/STOP.
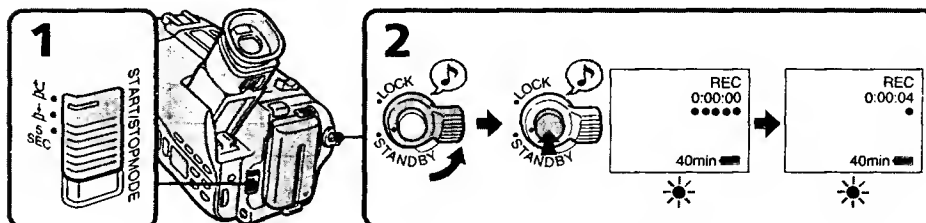
To extend the recording time in 5 SEC mode

Press START/STOP again before all the dots disappear. Recording continues for about 5 seconds from the moment you pressed START/STOP.

To return to normal recording

Set the START/STOP MODE switch to ⌚. If you set the switch while recording, recording continues.

Note on 5-SEC and ⌚ mode

You cannot use FADER if you select 5 SEC or ⌚.

Checking the tape condition before recording (ORC)

Use this feature to check the tape condition before recording, so that you can get the best possible picture.

(1) While the camcorder is in Standby mode, press MENU to display the menu.

(2) Turn the control dial to highlight ORC TO SET and press the control dial to select it. "START/STOP KEY" starts flashing.

(3) Press START/STOP.
The ORC indicator starts flashing. The camcorder takes about 5 seconds to check the condition of the tape head and the cassette. The ORC indicator disappears.
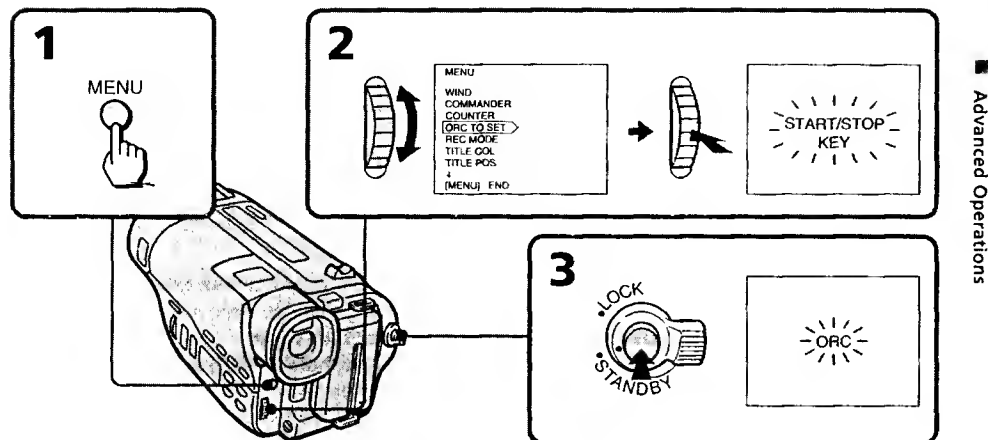
If the cassette has been ejected
Every time you eject the cassette, ORC is canceled. Set ORC again.

To check if you have performed ORC
Perform step 1 and step 2 above. If "ORC ON" is displayed, the tape condition has been checked.

When the tab on the cassette exposes a red mark
You cannot set ORC.

If you set ORC on the tape already recorded
A 0.1 second unrecorded part is automatically created on the tape. However, if you continue recording over the part, the unrecorded part on the tape is canceled.

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You can search for the boundary between recording dates using the Date Code automatically recorded on the tape.

There are two modes:
- Searching for the beginning of a specific date, and playing back from there (**Date Search**)
- Searching for the beginning of all days, one after another, playing back about 10 seconds of each (**Date Scan**)

JUL.4 1996 ←———→ JUL.5 1996 ←———→ DEC.31 1996

[a]　　　[b]　　　[c]
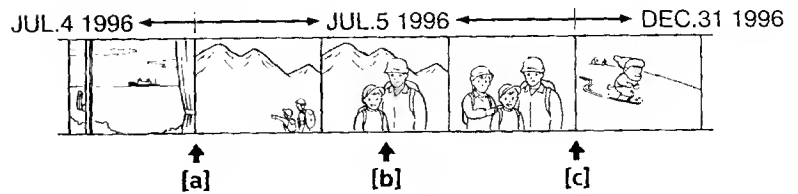
Each time you press DATE SEARCH, the mode changes as follows:

Date Search → Date Scan → nothing

To search for the beginning of a specific date

(1) Set the POWER switch to VTR. The tape transport buttons light up.
(2) Press DATE SEARCH on the Remote Commander.
(3) When the current position is [b], press ◄◄ to search towards [a] or press ►► to search towards [c].

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To scan the beginning of all days

(1) Set the POWER switch to VTR. The tape transport buttons light up.
(2) Press DATE SEARCH on the Remote Commander twice.
(3) Press ◄◄ or ►►. Date Scan starts.
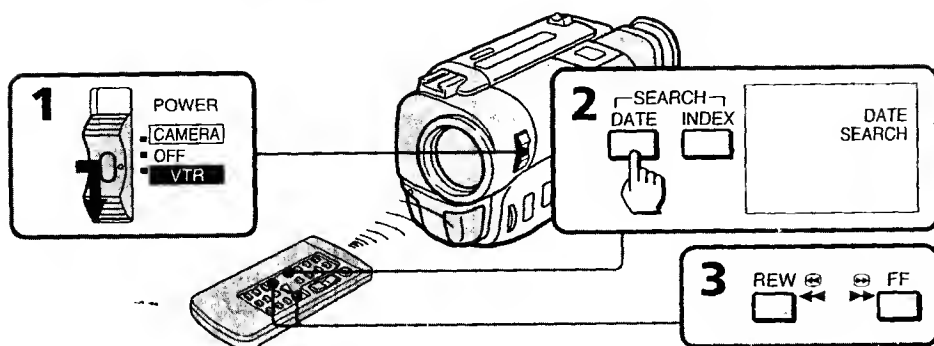
To stop searching or scanning

Press one of the following tape transport buttons: ▷, □, ◄◄ or ►►.

To view pictures during searching or scanning

Press ▷ and then press ◄◄ or ►►.

Notes on Date Search and Date Scan mode

- If a day's recording is not longer than 2 minutes, the camcorder may not accurately find its boundaries.
- Date Search and Date Scan do not function on a tape recorded by a camcorder without the Data Code function. Your camcorder has the Data Code function.

45

Using the Remote Commander, you can easily go back to the desired point on a tape after playback. Use the tape counter. If the RC time code appears in the viewfinder, set COUNTER to NORMAL in the menu system to display the tape counter.

(1) During playback, press COUNTER RESET at the point you later want to locate. The counter shows "0:00:00" in the viewfinder.

(2) Press ☐ when you want to stop playback.

(3) Press ZERO MEM on the Remote Commander. The ZERO MEM indicator flashes in the viewfinder.

(4) Press ◄◄ to rewind or press ►► to fast-forward the tape to the counter's zero point. The tape stops automatically when the counter reaches approximately zero.
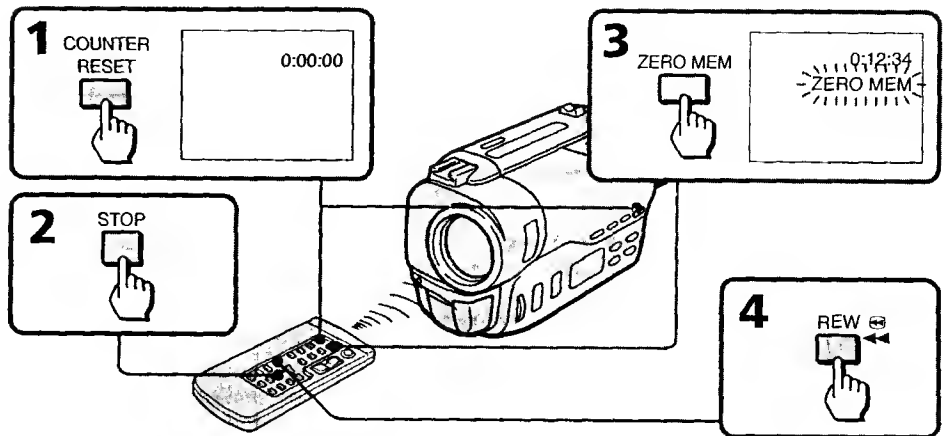
Notes on the tape counter
• Something must be recorded on the tape in order for the tape counter to function. Tape counter does not work on a blank tape.
• There may be a discrepancy of several seconds from the actual time.

Notes on ZERO MEM
• When you press ZERO MEM, the counter's zero point is memorized. Press ZERO MEM again before rewinding to cancel the memory.
• This function is canceled automatically once the tape is rewound or advanced to the point you pre-registered.
• ZERO MEM does not function during recording or playing back.

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Locating the marking position (CCD-TR910 only)

You can locate the beginning of a desired program easily by marking an index signal during recording or playback and searching for it later.

Marking an index signal

You can mark an index signal during recording or playback.

When marking at the beginning of recording or playback
Press INDEX MARK on the Remote Commander in recording standby or playback pause mode. The INDEX MARK indicator appears in the viewfinder with the MARK indicator flashing. When recording or playback starts, the MARK indicator stops flashing. This shows that the index signal is being marked. Then the INDEX MARK indicator will disappear.

When marking during recording or playback
Press INDEX MARK on the Remote Commander at the point you want to locate later.
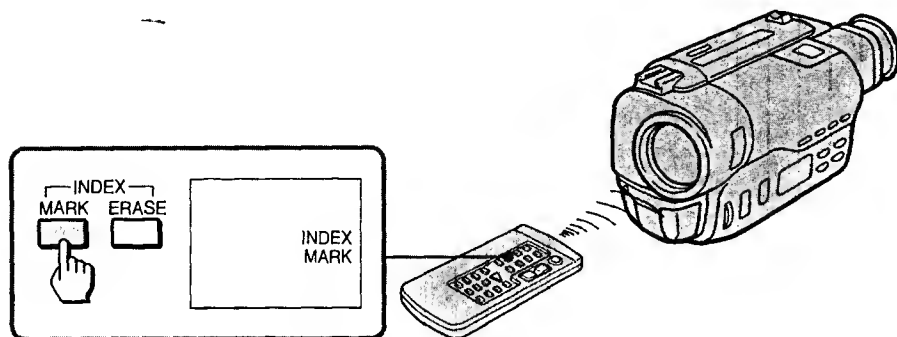
Notes on marking
- Make sure you mark index signals at more than two-minute intervals. Otherwise, you may not be able to search for them correctly.
- If you stop recording or playback while the index signal is being marked (the INDEX MARK indicator lights in the viewfinder), the search may not be completed correctly.
- If you mark an index signal on the tape with the Data Code or RC time cord recorded, the Data Code will be erased at the point on which the index signal is marked. When playing back this tape, the camcorder keeps displaying the Data Code immediately before the erased one. If the Data Code does not exist for more than 30 seconds, the Data Code displays bars (– –).
- A black band appears when you mark index signal during playback, and the sound cannot be heard. This does not affect the picture and sound that are already recorded.
- An index signal is marked automatically when you start recording with the POWER switch to VTR. When you start recording from recording pause mode, however, an index signal is not marked.
- You cannot mark an index signal on a tape with the red mark on the cassette exposed.
- You cannot mark an index signal when you are using 5 SEC, ≟ or fading out when the POWER switch is set to CAMERA.

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Scanning the beginning of each marking position — index scan

Use the Remote Commander. To view the picture on a TV, press DISPLAY.

(1)Press INDEX on the Remote Commander during normal playback or in stop mode.

(2)Press ◄◄ or ►►. The tape rewinds or advances rapidly and plays back for approximately 10 seconds from the point on which the index signal was marked. If you want to continue playback, press ▷. When you do not press any button, the tape is automatically scanned to the next program.
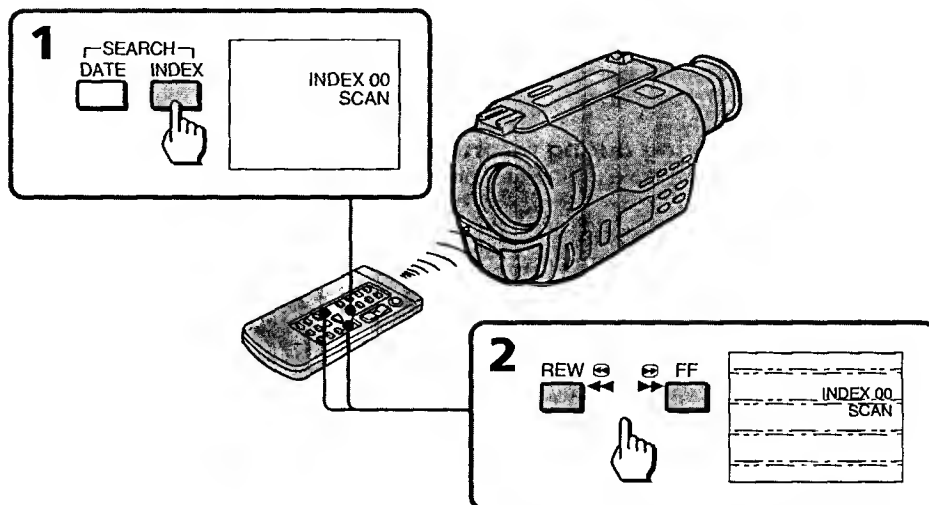
To cancel index scan mode

Press ▷. Normal playback resumes.

(1) Press INDEX on the Remote Commander during stop or playback mode.
(2) Press INDEX repeatedly until the index number of the desired program is displayed in the viewfinder.
(3) Press ◄◄ or ►►. Playback starts from the beginning of the desired program.

[a] the current position
[b] the INDEX number
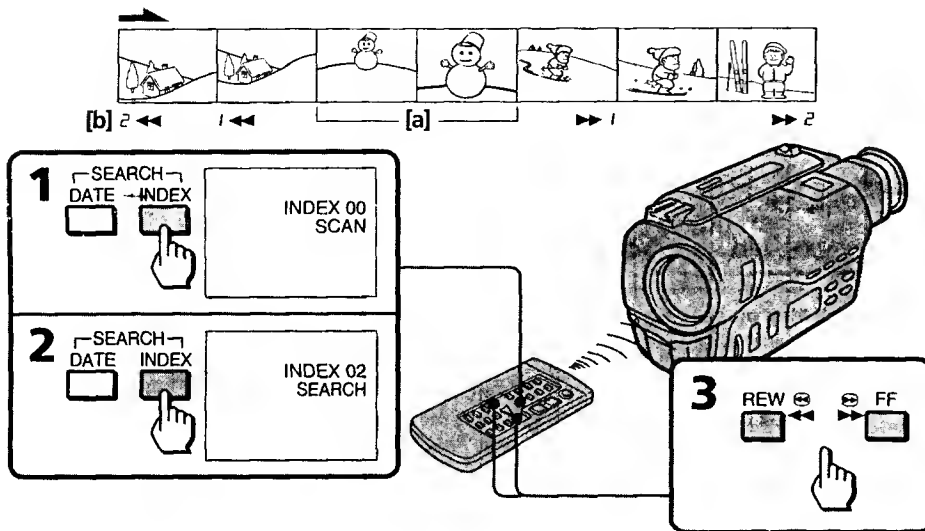
To stop index search mode
Press ▷. Normal playback resumes.

Note on the index number
The index number (1, 2, etc.) indicates the distance from the point you are now viewing
[a], regardless of the direction.

Erasing an index signal

(1) Locate the index signal to be erased using the index scan or index search function.

(2) Press INDEX ERASE on the Remote Commander within 2 to 10 seconds while the desired program plays back. After the index signal is erased, the camcorder returns to index scan or index search mode, whichever was used in step 1.
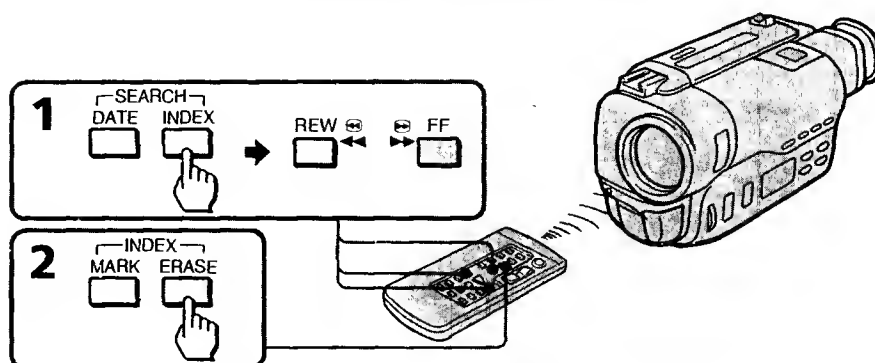
Notes on erasing

• Press INDEX ERASE more than 2 seconds after the playback of the desired program begins.

• You cannot erase the index signal on a tape with the red mark on the cassette exposed.

• While the index signal is being erased, the sound may not be heard and a black band appears at the bottom of the picture. This will not affect the recorded sound or picture.

• The camcorder can detect index signals marked with VCRs, but may not erase them. VCRs with an index function can detect index signals marked with this camcorder but may not erase them.

• An index signal may be erased when making PCM after recording on another VCR in the portion where the index signal is marked.

Note on Data Code

When an index signal is erased, Data Code on the same portion of the tape is also erased.

Writing the RC Time code on a recorded tape (CCD-TR910 only)

You can write the RC time code on a recorded tape. Use the Remote Commander.

(1)While pressing the small green button on the POWER switch, slide it to VTR.

(2)Rewind the tape to the beginning and set the camcorder to playback pause mode.

(3)Press TIME CODE WRITE on the Remote Commander. The TIME CODE WRITE indicator appears in the viewfinder with the WRITE indicator flashing.

(4)Press ▷ or II to start playback. The WRITE indicator stops flashing and the RC time code writing starts from 0:00:00:00.
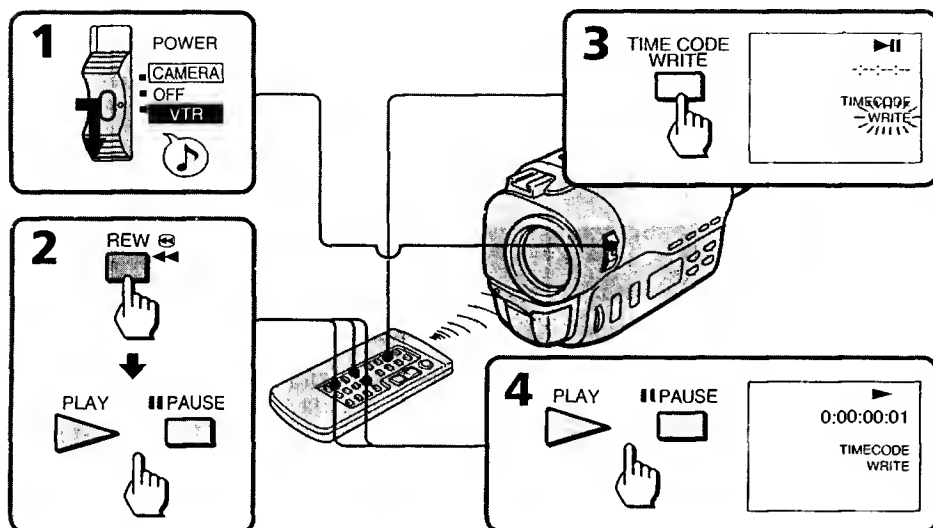
To stop writing the RC time code

Press ☐ (or any tape transport button).

To write the RC time code from the end of the RC time code recorded portion

Rewind the tape to the portion on which the RC time code has been written and set the camcorder to playback pause mode. Then follow steps 3 and 4 above. The RC time code is written continuously.

Notes on writing the RC time code

• The RC time code writing stops when:
  - you press TIME CODE WRITE again before starting playback.
  - you press INDEX or DATE before starting playback.
  - you change from playback to another mode.
• When you are writing the RC time code from the middle of a tape without the time code written, writing starts several frames before the current picture.
• If you write the RC time code on a recorded tape, the Data Code is erased.
• You can mark the RC time code on a tape recorded both in LP mode and SP mode, the RC time code written in LP mode, however, may not be read correctly.
• You cannot mark the RC time code on an PAL-recorded tape.
• You cannot write the RC time code on a tape with the red mark on the cassette exposed.

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Note on --:--:--:-- indicator

The --:--:--:-- indicator appears during playback if:
• nothing is recorded.
• the RC time code is unreadable because of the damage of the tape or because of the noise.
• you recorded using another VCR without RC time code function.

Editing onto another tape

You can create your own video program by editing with any other ⯐ 8 mm, Hi⯐ Hi8, 𝖵𝖧𝖲 VHS, S𝖵𝖧𝖲 S-VHS, 𝖵𝖧𝖲𝖢 VHSC, S𝖵𝖧𝖲𝖢 S-VHSC, ⯐ Betamax or ED𝖡𝖾𝗍𝖺 ED Betamax VCR that has video/audio inputs.

Before editing

Connect the camcorder to the VCR as described in "Connections for playback" on page 16.
Set the input selector on the VCR to LINE, if available.
(1)While pressing the small green button on the POWER switch, slide it to VTR.
(2)Set EDIT to ON in the menu system.

52   ⇨ : Signal flow

Starting editing

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert your recorded tape into the camcorder.

(2) Play back the recorded tape on the camcorder until you locate the point where you want to start editing, then press ❙❙ to set the camcorder in playback pause mode.

(3) On the VCR, locate the recording start point and set the VCR in recording pause mode.

(4) Press ❙❙ on the camcorder and VCR simultaneously to start editing.

To edit more scenes
Repeat steps 2 to 4.

To stop editing
Press ☐ on both the camcorder and the VCR.

Note on the DISPLAY function
If you have displayed the viewfinder screen indicators on the TV, erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

Advanced Operations

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You can record a tape from another VCR or a TV program from a TV that has audio/ video outputs. Connect the camcorder to the VCR or TV.

(1) While pressing the small green button on the POWER switch, slide it to VTR.

(2) Press REC ● and the button on the right together at the point where you want to start recording.

In recording and recording pause mode, S VIDEO (CCD-TR910 only) and VIDEO/ AUDIO jacks automatically work as input jacks.
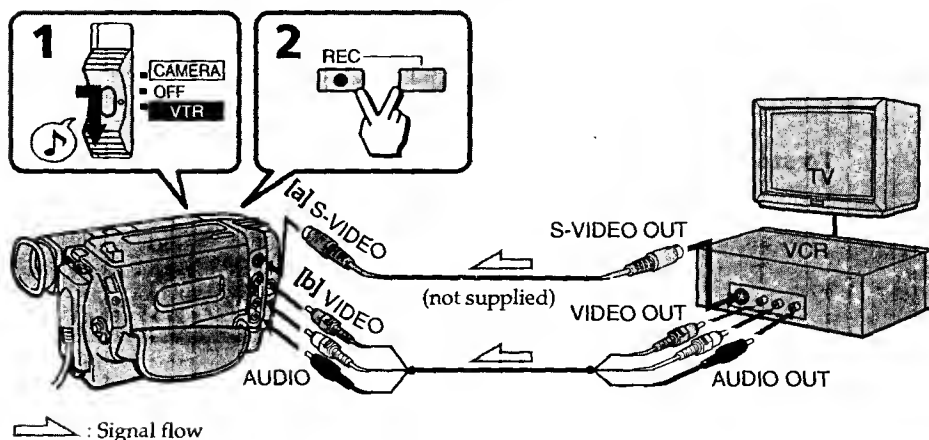
⮞ : Signal flow

If your VCR or TV is a monaural type, connect only the white plug for audio on both the camcorder and the VCR or TV.

If you are going to connect the camcorder using the S video cable (not supplied) [a], you do not need to connect the yellow (video) plug of the A/V connecting cable [b] (CCD-TR910 only).

To check the picture from a VCR or TV before recording

Press **II** after pressing ●. You can check the picture in the viewfinder.

To stop recording

Press □.

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You can insert a new scene from a VCR onto your originally recorded tape by specifying starting and ending points.

Connections are the same as in "Recording from a VCR or TV" on the previous page.

(1) In the menu system, make sure that the item of COUNTER is set to NORMAL. While pressing the small green button on the POWER switch, slide it to VTR.

(2) On the VCR, locate the start point to be inserted and set it to playback pause mode.

(3) On the camcorder, locate the point where the insert should end by pressing ◀◀ or ▶▶, then press II to set it to playback pause mode.

(4) Press COUNTER RESET to set the counter to zero.

(5) On the camcorder, locate the point where the insert should begin by pressing ◀◀, then press ● REC and II to set it to recording pause mode.

(6) Press ZERO MEM on the Remote Commander. The ZERO MEM indicator flashes and the end point of the insert is stored in memory.

(7) Press II on the camcorder and the VCR simultaneously to start insert editing. The insert editing stops automatically near the counter's zero point.

To change the end point

Press ZERO MEM on the Remote Commander so that the ZERO MEM indicator disappears and begin from step 3.

Note on the inserted picture

The picture may be distorted at the end of the inserted portion when it is played back.

Advanced Operations

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Changing the lithium battery in the camcorder

Your camcorder is supplied with a lithium battery installed. When the battery becomes weak or dead, the ☼ indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 lithium battery. Use of any other battery may present a risk of fire or explosion.**
The lithium battery for the camcorder lasts for about 1 year under normal operation. (The lithium battery that comes installed at the factory may not last 1 year.)

☼ JUL. 4 1996
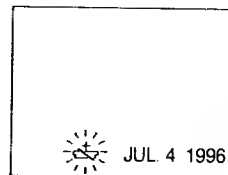
Note on lithium battery
The lithium battery has positive (+) side and negative (–) side as illustrated. **Be sure to insert the lithium battery with the positive side facing out.**

(+)   (–)
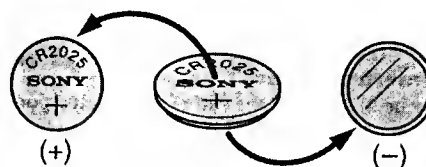
WARNING
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Caution
Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.

Changing the lithium battery

When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and other items in the menu system retained by the lithium battery.
(1) Open the lid of the lithium battery compartment.
(2) Push the battery down once and pull it out from the holder.
(3) Install the lithium battery with the positive (+) side facing out. Close the lid.
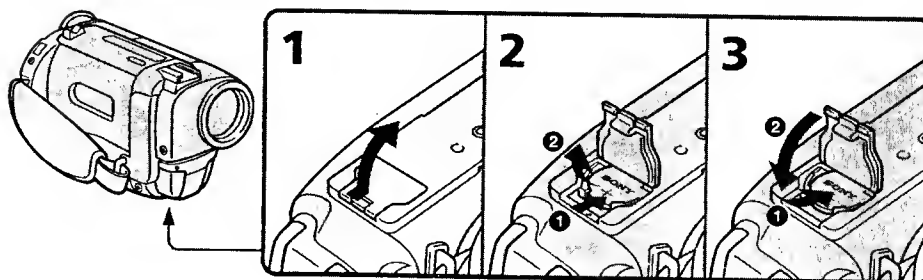
Resetting the date and time

You can set the date and time in the menu system.
(1) Press MENU to display the menu in the viewfinder.
(2) Turn the control dial to highlight CLOCK SET, and press the control dial to select it.
(3) Turn the control dial to adjust the year, and then press the control dial.
(4) Set the month, day, hour, and minutes by turning the control dial and then pressing the control dial.
(5) Press MENU to erase the menu display.
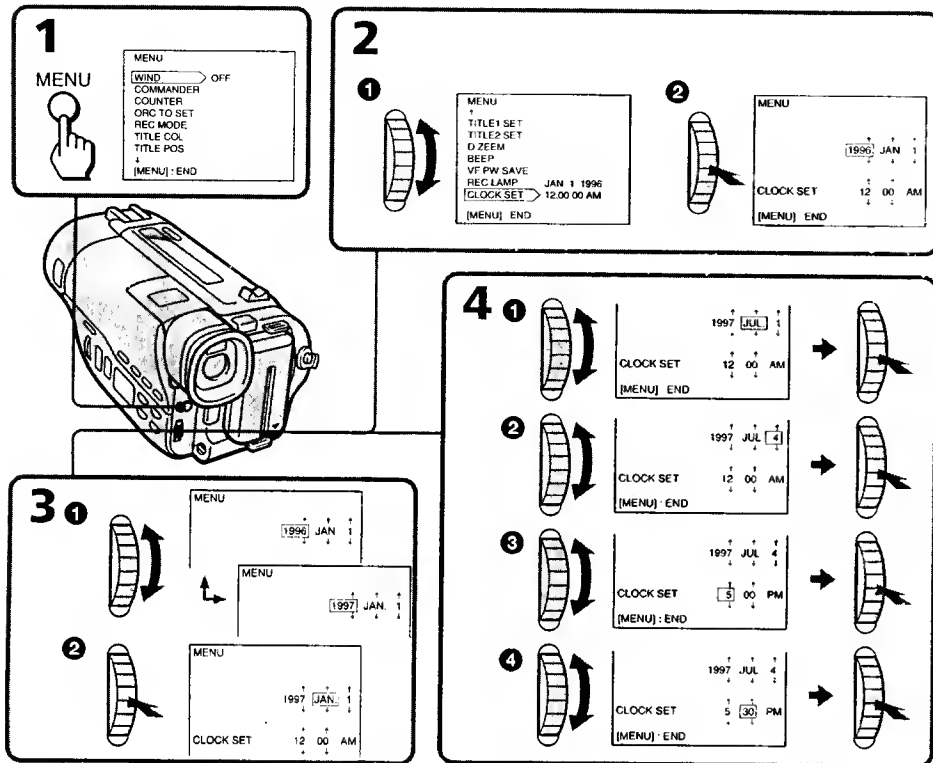
To correct the date and time setting
Repeat the above procedure.

To check the preset date and time
Press DATE to display the date indicator in the viewfinder.
Press TIME to display the time indicator.
When you press the same button again, the indicator goes off.

The year changes as follows:

1996 ←→ 1997 ←— ···· —→ 2029

Note on the time indicator
The internal clock of this camcorder operates on a 12-hour cycle.
• 12:00 AM stands for midnight.
• 12:00 PM stands for noon.

57

Selecting cassette types (CCD-TR910 only)

This Hi8 system is an extension of the standard 8 mm system, and was developed for higher-quality pictures.

You can use Hi8 video and standard 8 mm cassettes. When you want to record in the Hi8 system, use only Hi8 video cassettes. You cannot record on standard 8 mm cassettes in the Hi8 system.

If you are going to play back the tape using the standard 8 mm video recorder/player, you should use standard 8 mm cassettes.

When you use a Hi8 video cassette, you cannot record in LP mode. The **Hi8** indicator flashes in the viewfinder when you load a Hi8 video cassette with LP selected. If you start recording with the **Hi8** indicator flashing. The **Hi8** indicator disappears and you can use the tape in standard 8 mm system. If you select SP, you can record the tape in Hi8 format.

To play back in	Record using cassette type
Hi8	**Hi8**
Standard 8	**8**

When you play back

The playback mode (SP/LP or Hi8/standard 8 mm) is selected automatically according to the format in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

Note on AFM HiFi stereo

When you play back a tape, the sound will be in monaural if:
• You record the tape using this camcorder, then play it back on an AFM HiFi monaural video recorder/player.
• You record the tape on an AFM HiFi monaural video recorder, then play it back on this camcorder.

Recording mode

When you play back a tape, the SP/LP indicator in the viewfinder shows the recording mode SP/LP.

Foreign 8 mm video

Because the TV color systems differ from country to country, you may not be able to play back foreign pre-recorded tapes. Refer to the list of "Using Your Camcorder Abroad" to check the TV color system of foreign countries.

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Tips for using the battery pack

This section shows you how you can get the most out of your battery pack.

Preparing the battery pack

Always carry additional batteries
Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery life is shorter in a cold environment
Battery efficiency is decreased, and the battery will be used up more quickly, if you are recording in a cold environment.

To save battery power
Turn STANDBY down when not recording to save battery power.
A smooth transition between scenes can be made even if recording is stopped and started again. While you are positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

When to replace the battery pack

While you are using your camcorder, the remaining battery indicator in the viewfinder decreases gradually as battery power is used up.
The minute indicator appears with the remaining battery indicator while recording.

When the remaining battery indicator reaches the lowest point, the ⟨⟩ indicator appears and starts flashing in the viewfinder.
When the ⟨⟩ indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, slide the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain a smooth transition between scenes after the battery pack has been replaced.
The mark may start flashing even when the battery has enough power to last about 5 or 10 minutes.

Notes on the rechargeable battery pack

Caution
Never leave the battery pack in temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight.

The battery pack heats up
During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern and is normal.

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About (i)InfoLITHIUM batteries

The InfoLITHIUM is a lithium ion battery pack which can exchange data with compatible video equipment about its battery consumption. Sony recommends that you use the InfoLITHIUM battery pack with video equipment having the (i)InfoLITHIUM mark.

When you use this battery pack with video equipment having the (i)InfoLITHIUM mark, the video equipment will indicate the remaining battery time in minutes*. However, if you use it with video equipment not having this mark, the remaining battery capacity will not be indicated in minutes.

* The indication may not be accurate depending on the condition and environment which the equipment is used under. If the indication is not accurate, use the battery pack completely and then charge it fully. The indication will become accurate. However, the indication may not become accurate if you use or leave the battery pack in a warm place for a long time, or after you have used the battery pack many times.

Battery pack care

• **Remove the battery pack from the camcorder after using it,** and keep it in a cool place. When the battery pack is installed to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF. This shortens battery life.

• The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery pack right before using the camcorder.

Notes on the Battery Case

• **Use only with alkaline batteries. You cannot use the battery case with manganese batteries or rechargeable batteries.**

• Battery life is remarkably shorter in a cold environment (lower than 50°F/10°C).

• Keep the metal part clean. If it gets dirty, wipe it with a soft cloth.

• Do not disassemble or convert the battery case.

• Do not expose the battery case to any mechanical shock.

• During recording, the battery case heats up. This is not cause for concern.

• Prevent the electrode in the battery case from coming in contact with a metal object.

• If you will not use the battery case for a long time, detach the battery case from the camcorder and remove the batteries from the battery case.

Note on Alkaline Batteries

To avoid possible damage from battery leakage or corrosion, observe the following.

• Be sure to insert the batteries in the correct direction.

• Alkaline batteries are not rechargeable.

• Do not use a combination of new and old batteries.

• Do not use different types of batteries.

• The batteries slowly discharge while not in use.

• Do not use a battery that is leaking.

If battery leakage occurred

• Wipe off the liquid in the battery case carefully before replacing the batteries.

• If you touch the liquid, wash it off with water.

• If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

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The switch on the battery pack

This switch is provided so that you can mark the charged battery pack. Set the switch to the "green mark" position when charging is completed. (When removed from the charging adaptor, the switch exposes the green mark. When removed from your camcorder, no mark is indicated.)
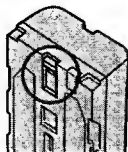
The life of the battery pack

If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging temperature

You should charge batteries at temperatures from 50°F to 86°F (from 10°C to 30°C). Lower temperatures require a longer charging time.

Notes on charging

A brand-new battery pack

A brand-new battery pack is not charged. Before using the battery pack, charge the battery. When the CHARGE lamp goes out, normal charge is completed. For full charge, which allows you to use the battery longer than usual, leave the battery pack in place for approximately one hour.

Recharge the battery pack whenever you like

You do not have to discharge it before recharging. If you charged the battery pack fully but you did not use it for a long time, it becomes discharged. Then recharge the battery pack before use.

Notes on the terminals

If the terminals (metal parts on the back) are not clean, the battery charge duration will be shortened.

When the terminals are not clean or when the battery pack has not been used for a long time, repeatedly install and remove the battery pack a few times. This improves the contact condition. Do not put any foreign objects such as dust or sand in the ⊕ and ⊖ terminals.

Be sure to observe the following

• Keep the battery pack away from fire.
• Keep the battery pack dry.
• Do not open nor try to disassemble the battery pack.
• Do not expose the battery pack to any mechanical shock.

Additional Information

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Moisture condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. Please, take the following precautions.

Inside the camcorder

If there is moisture inside the camcorder, the beep sounds and the ▣ indicator flashes. If this happens, none of the functions except cassette ejection will work. Open the cassette compartment, turn off the camcorder, and leave it about 1 hour. When ▲ indicator flashes at the same time, the cassette is inserted in the camcorder. Eject the cassette, turn off the camcorder, and leave also the cassette about 1 hour.

On the lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to prevent moisture condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.
(1) Be sure to tightly seal the plastic bag containing the camcorder.
(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

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Video head cleaning

To ensure normal recording and clear pictures, clean the video heads. When the ✪ indicator and "🎞 CLEANING CASSETTE" message appear one after another in the viewfinder or playback pictures are "noisy" or hardly visible, the video heads may be dirty.

[a] ➡️ [b]

[a] Slightly dirty
[b] Very dirty

If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy," repeat the cleaning. (Do not repeat cleaning more than 5 times in one session.)

Caution
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note
If the V8-25CLH cleaning cassette is not available in your area, consult your nearest Sony dealer.

Precautions

Camcorder operation
• Operate the camcorder on 7.2 V (battery pack) or 8.4 V (AC power adaptor).
• For DC or AC operation, use the accessories recommended in this manual.
• Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by a Sony dealer before operating it any further.
• Avoid rough handling or mechanical shock. Be particularly careful of the lens.
• Keep the POWER switch set to OFF when not using the camcorder.
• Do not wrap up the camcorder and operate it since heat may build up internally.
• Keep the camcorder away from strong magnetic fields or mechanical vibration.

On handling tapes
Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape and if the recording tab is in or out.

Additional Information

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Camcorder care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

AC power adaptor

Charging

- Use only a lithium ion type battery pack.
- Place the battery pack on a flat surface without vibration during charging.
- The battery pack will get hot during charging. This is normal.

Others

- Unplug the unit from the wall outlet when not in use for a long time. To disconnect the power cord, pull it out by the plug. Never pull the power cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the AC power cord forcibly, or put a heavy object on it. this will damage the cord and may cause a fire or electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Each country has its own electric and TV color systems. Before using your camcorder abroad, check the following points.

Power sources

You can use your camcorder in any country with the supplied AC power adaptor within 110 V to 240 V AC, 50/60 Hz.

Use a commercially available adaptor [a], if necessary, depending on the design of the wall outlet [b].

AC-V316   [a]   [b]

Difference in color systems

This camcorder is an NTSC system-based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system-based TV.
Check the following list.

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country
Brazil

PAL-N system countries
Argentina, Paraguay, Uruguay

SECAM system countries
Bulgaria, Czech Republic, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Slovak Republic, Ukraine, etc.

Additional Information

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Trouble check

If you run into any problem using the camcorder, use the following table to troubleshoot the problem. Should the difficulty persist, disconnect the power source and contact your Sony dealer or local authorized Sony service facility.

Camcorder

Power

Symptom	Cause and/or Corrective Action
The power is not on.	• The battery pack is not installed. → Install the battery pack. (p.7) • The battery is dead. → Use a charged battery pack. (p.6) • The AC power adaptor is not connected to the wall outlet. → Connect the AC power adaptor to the wall outlet. (p.20) • Some accessories are attached to the camcorder when the battery pack is weak → Use a charged battery pack. (p.6) • You use other types of battery except NP-F530/F730.
The power goes off.	• While being operated in CAMERA mode, the camcorder has been in Standby mode for more than 5 minutes. → Turn STANDBY down once and then up again. (p.10) • The battery is dead. → Use a charged battery pack. (p.6)
The battery pack is quickly discharged.	• The ambient temperature is too low. (p.6) • The battery pack has not been charged fully. → Charge the battery pack again. (p.6) • The battery pack is completely dead, and cannot be recharged. → Use another battery pack. (p.7) • The battery pack is discharged during a long period of storage. → Charge the battery pack again. (p.6) • You use other types of battery except NP-F530/F730.
The beep sounds when the battery is attached	• The battery pack is discharged during a long period of storage. → Charge the battery pack again. (p.6)
When you turn off the power, the lens makes a noise.	• The camcorder is not malfunctioning.

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Operation

Symptom	Cause and/or Corrective Action
START/STOP does not operate.	• The tape is stuck to the drum. → Eject the tape. (p.9) • The tape has run out. → Rewind the tape or use a new one. (p.17) • The POWER switch is set to VTR. → Set it to CAMERA. (p.10) • The tab on the cassette is out (red). → Use a new tape or slide the tab. (p.9)
The cassette cannot be removed from the holder.	• The battery is dead. → Use a charged battery pack or the AC power adaptor. (p.6, 20)
⬛ and ⏏ indicators flash and no function except for cassette ejection works.	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least 1 hour. (p.9)
The counter, date, or time indicator is flashing.	• You pressed DATE and TIME together for more than 2 seconds. → The camcorder is not malfunctioning. You may start recording. Flashing will stop soon. • The lithium battery is weak or dead. → Replace the lithium battery with a new one. (p.56)
The tape does not move when a tape transport button is pressed.	• The POWER switch is set to CAMERA or OFF. → Set it to VTR. • The tape has run out. → Rewind the tape or use a new one. (p.17)
The date or time indicator disappears.	• Reset the date and time. (p.57)
The Steady Shot function does not activate.	• STEADY SHOT is set to OFF. → Set STEADY SHOT to ON. (p.35) • The Steady Shot function does not work when the wide mode is set to 16:9 FULL. → Set another mode. (p.26)
The autofocusing function does not work.	• FOCUS is set to MANUAL. → Set it to AUTO. (p.30) • Shooting conditions are not suitable for autofocus. → Set FOCUS to MANUAL to focus manually. (p.30)
No sound or only a low sound is heard when playing back a tape.	• The stereo tape is played back with HiFi SND set to 1 or 2 in the menu system. → Set to STEREO in the menu system. (p.24)
FADER does not activate.	• The START/STOP MODE switch is set to 5 SEC or ⊥. → Set it to ⨅. (p.42) • A title is displayed. → Stop superimposing the title.
Recording stops in a few seconds.	• The START/STOP MODE switch is set to 5 SEC or ⊥. → Set it to ⨅. (p.42)
Excessive high-pitched sound is heard.	• The picture has been recorded with WIND set to ON in the menu system. → When there is no wind, set it to OFF. (p.23)

Additional Information

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Picture

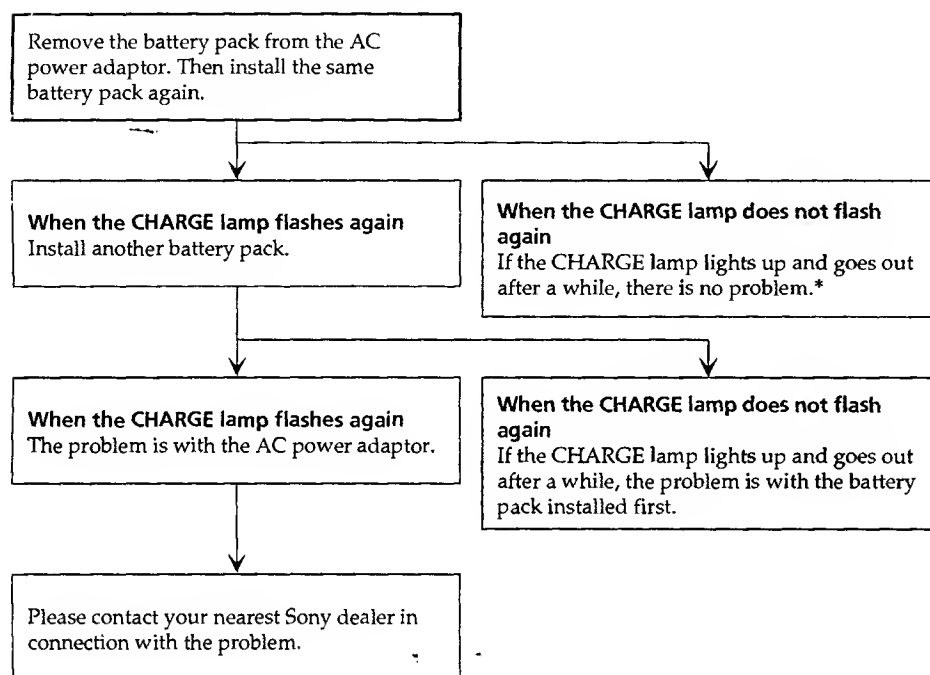| Symptom	Cause and/or Corrective Action
The image on the viewfinder screen is not clear.	• The viewfinder lens is not adjusted. → Adjust the viewfinder lens. (p.11)
A vertical band appears when a subject such as lights or a candle flame is shot against a dark background.	• The contrast between the subject and background is too high. The camcorder is not malfunctioning. → Change locations.
A vertical band appears when shooting a very bright subject.	• The camcorder is not malfunctioning.
The playback picture is not clear.	• EDIT is set to ON in the menu system. → Set it to OFF. (p.24)
The picture is "noisy".	• The video heads may be dirty. → Clean the heads using the Sony V8-25CLH cleaning cassette (not supplied). (p.63)
An unknown picture is displayed.	• The camcorder is operating in Demo mode. → Exit Demo mode. (p.74)

Others

Symptom	Cause and/or Corrective Action
The supplied Remote Commander does not work.	• COMMANDER is set to OFF in the menu system. → Set it to ON. (p.24) • Something is blocking the infrared rays. → Remove the obstacle. • The batteries are not inserted with the correct polarity. → Insert the batteries with the correct polarity. (p.75) • The batteries are dead. → Insert new ones. (p.75)
The tape counter/RC time code indicator or the Date or Time indicator flashes in the viewfinder. (CCD-TR910 only)	• The lithium battery in the camcorder becomes weak. → Replace the lithium battery with a new one. (p.56)
The DATE or the TIME indicator becomes --:--. (CCD-TR910 only)	→ Reset the date or the time again.

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AC power adaptor

Symptom	Corrective Actions
The VTR/CAMERA or CHARGE lamp does not light.	• Disconnect the power cord. After about 1 minute, reconnect the power cord.
The CHARGE lamp flashes.	• See the following chart.

When the CHARGE lamp flashes

Check through the following chart.

Remove the battery pack from the AC power adaptor. Then install the same battery pack again.

↓

When the CHARGE lamp flashes again
Install another battery pack.

When the CHARGE lamp does not flash again
If the CHARGE lamp lights up and goes out after a while, there is no problem.*

↓

When the CHARGE lamp flashes again
The problem is with the AC power adaptor.

When the CHARGE lamp does not flash again
If the CHARGE lamp lights up and goes out after a while, the problem is with the battery pack installed first.

↓

Please contact your nearest Sony dealer in connection with the problem.

* If you use a battery pack which you have just bought or which has been left unused for a long time, the CHARGE lamp may flash at the first charging. This does not indicate a problem. Repeat again to charge with the same battery pack.

Video camera recorder

System

Video recording system
Two rotary heads, Helical scanning FM system
Audio recording system
Rotary heads, FM system
Video signal
NTSC
Usable cassette
8mm video format cassette (Hi8 (CCD-TR910 only) or standard 8 mm)
Recording/Playback time
SP mode: 2 hours (E6/P6-120)
LP mode: 4 hours (E6/P6-120)
When you use a Hi8 video cassette, you cannot record in LP mode.
Fastforward/rewind time
Approx. 5 min. (E6/P6-120)
Image device
CCD (Charge Coupled Device)
Viewfinder
Electronic viewfinder (Color)
Lens
Combined power zoom lens
Filter diameter 1 $^7/_{16}$ in. (37 mm)
15x (Optical)
30x (Digital)
Focal distance
$^3/_{16}$ – 2 $^3/_8$ in. (4.1 – 61.5 mm)
1 $^9/_{16}$ – 22 $^1/_{16}$ in. (39 – 585 mm) when converted to a 35 mm still camera
Minimum illumination
2 lux at F 1.4
Illumination range
2 lux (F 1.4) to 100,000 lux
Recommended illumination
More than 100 lux

Input and output connectors

S video input/output (CCD-TR910 only)
4-pin mini DIN
Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
Chrominance signal: 0.286 Vp-p, 75 ohms, unbalanced
Video input/output
Phono jack, 1 Vp-p, 75 ohms, unbalanced, sync negative
Audio input/output
Phono jacks (2 stereo L and R) 327 mV, (at output impedance 47 kilohms) impedance less than 2.2 kilohms
RFU DC OUT
Special minijack, DC 5 V
Headphone jack
Stereo minijack
LANC control jack
Stereo mini-minijack (ø 2.5 mm)
MIC jack
Minijack, 0.388 mV low impedance with 2.5 to 3.0 V DC, output impedance 6.8 kilohms (ø 3.5 mm)
Stereo type

General

Power requirements
7.2 V (battery pack)
8.4 V (AC power adaptor)
Average power consumption
4.1 W during camera recording
Operating temperature
32°F to 104°F (0°C to 40°C)
Storage temperature
–4°F to +140°F (–20°C to +60°C)
Dimensions (Approx.)
4 $^1/_4$ x 4 $^3/_8$ x 7 $^1/_8$ in. (104 x 109 x 178 mm) (w/h/d)
Mass (Approx.)
1 lb 12 oz (800 g) excluding the battery pack, lithium battery, cassette and shoulder strap
2 lb 1 oz (940g) including the battery pack NP-F530, lithium battery CR 2025, cassette E6/P6-120 and shoulder strap
Microphone
Stereo type
Supplied accessories
See page 5.

AC power adaptor

Power requirements
110 – 240 V AC, 50/60 Hz
Power consumption
25 W
Output voltage
DC OUT: 8.4 V, 1.9 A in operating mode
Battery charge terminal: 8.4 V, 1.4 A in charge mode
Application
Sony battery packs NP-F530, NP-F730 lithium ion type
Operating temperature
32°F to 104°F (0°C to 40°C)
Storage temperature
–4°F to +140°F (–20°C to +60°C)
Dimensions (Approx.)
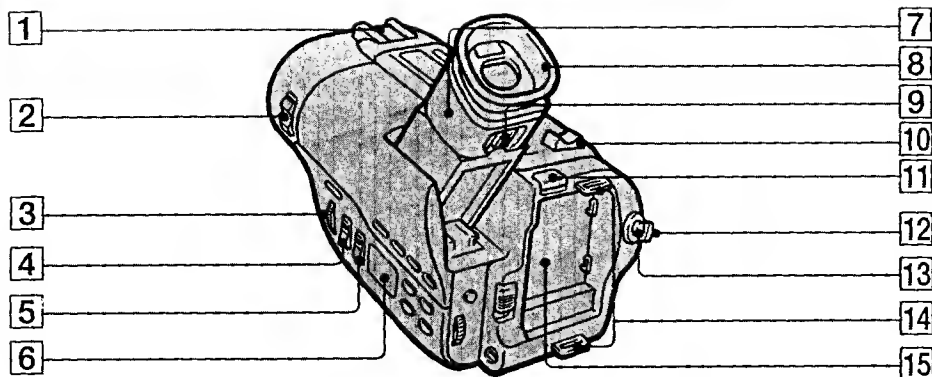3 $^1/_4$ x 1 $^{13}/_{16}$ x 6 $^1/_2$ in. (81 x 45 x 163 mm) (w/h/d) including projecting parts and controls
Mass (Approx.)
1 lb 3 oz (560 g)

Design and specifications are subject to change without notice.

Identifying the parts

[1] Intelligent accessory shoe (for CCD-TR910)
Accessory shoe (for CCD-TR710)
The intelligent accessory shoe supplies power to optional accessories such as a video light.

[2] POWER switch (p.10)

[3] FAR/NEAR dial (p.30)

[4] FOCUS switch (p.30)

[5] STEADY SHOT switch (p.35)

[6] Display window (p.78)

[7] Viewfinder (p.11, 14)

[8] Eyecup (p.14)

[9] Viewfinder lens adjustment lever (p.11)

[10] Power zoom lever (p.13)

[11] BATT (battery) PUSH button (p.7)

[12] STANDBY switch (p.10)

[13] START/STOP button (p.10)

[14] Hooks for shoulder strap (p.77)

[15] Battery mounting surface

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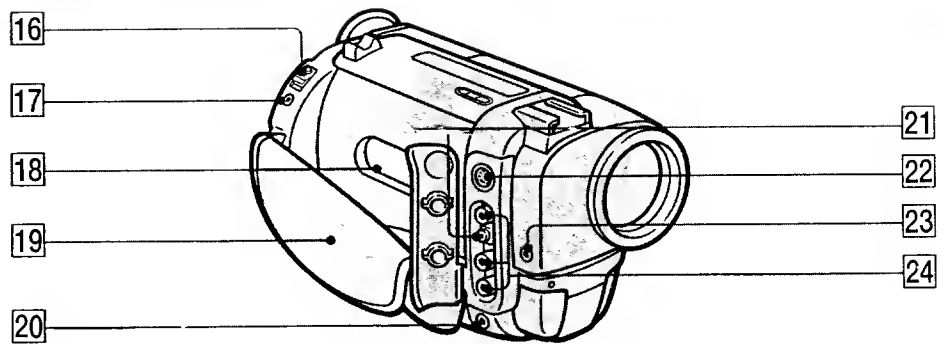
16 EJECT switch (p.9)

17 REMOTE LANC ☾ control jack
☾ stands for Local Application Control Bus System. The ☾ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

18 Cassette compartment (p.9)

19 Grip strap (p.14)

20 ⌒ (headphones) jack (p.17)

21 RFU DC OUT (RFU adaptor DC output) jack (p.16)

22 S VIDEO jack (CCD-TR910 only) (p.16)

23 MIC jack (PLUG IN POWER)
Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone.

24 VIDEO/AUDIO jacks (p.16)
The jack changes automatically, allowing it to function as both an input jack and an output jack.

72
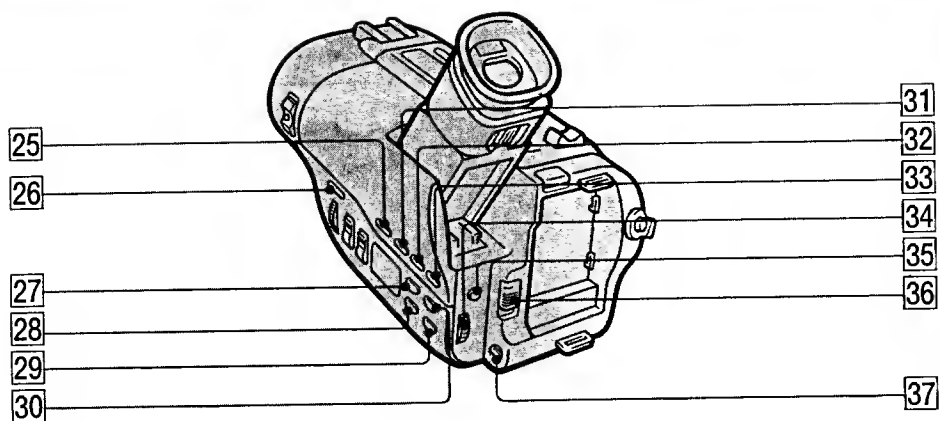
25 BACKLIGHT button (p.33)

26 FADER button (p.25)

27 TITLE button (p.36)

28 PICTURE EFFECT button (p.27)

29 PROGRAM AE button (p.31)

30 EXPOSURE button (p.34)

31 DATE button (p.20, 40)

32 TIME button (p.20, 40)

33 COUNTER RESET button (p.12, 41)

34 CONTROL dial (p.23)

35 MENU button (p.23)

36 START/STOP MODE switch (p.42)

37 WIDE button (p.26)

Additional Information

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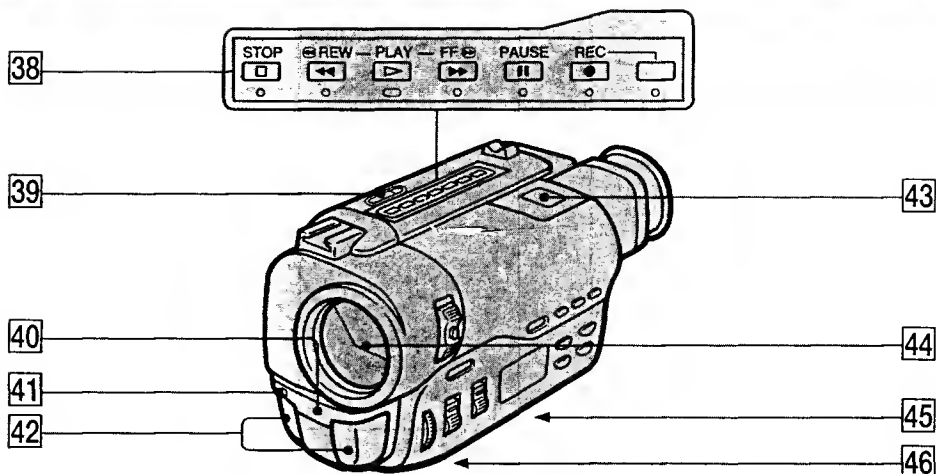
38 Tape transport buttons (p.17)
□ STOP (stop)
◀◀ REW (rewind)
▷ PLAY (playback)
▶▶ FF (fastforward)
II PAUSE (pause)
● REC (recording)

39 EDITSEARCH button (p.15)

40 Remote sensor (p.76)
Aim the Remote Commander here for
remote control.

41 Camera recording/battery lamp (p.10)

42 Microphone

43 Lighting aperture (p.14)

44 Lens cover (p.10)

45 Tripod receptacle (p.14)

46 Lithium battery compartment (p.56)

To watch the demonstration

You can watch a brief demonstration of pictures with special effects. If the
demonstration appears when you turn on the camcorder for the first time, exit the
Demo mode to use your camcorder.

To enter Demo mode
(1) Eject the cassette and set the POWER switch to OFF.
(2) Turn STANDBY up.
(3) While holding down ▷, set the POWER switch to CAMERA. The demonstration
starts. The demonstration stops when you insert the cassette.

Note that once you enter Demo mode, this mode is retained as long as the lithium
battery is in place. Therefore, demonstration starts automatically 10 minutes later every
time you set the POWER switch to CAMERA, and after you eject the cassette.

To exit Demo mode
(1) Set the POWER switch to VTR.
(2) Turn STANDBY up.
(3) While holding down □, set the POWER switch to CAMERA.
DEMO OFF appears in the viewfinder.

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Remote Commander

The buttons that have the same name on the Remote Commander as on the camcorder function identically.

RMT-715 (for CCD-TR910)

RMT-708 (for CCD-TR710)

To prepare the Remote Commander

To use the Remote Commander, you must insert two size AA (R6) batteries. Use the supplied size AA (R6) batteries.
(1) Remove the battery cover from the Remote Commander.
(2) Insert both of the size AA (R6) batteries with correct polarity.
(3) Put the battery cover back onto the Remote Commander.

Additional Information

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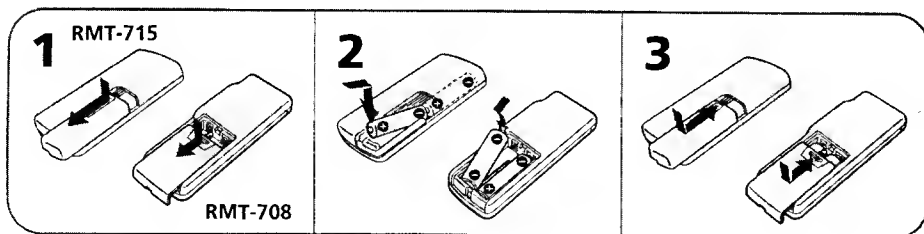
Note on battery life
The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

To avoid damage from possible battery leakage
Remove the batteries when you will not use the Remote Commander for a long time.

To use the Remote Commander
Make sure that the COMMANDER is set to ON in the menu system on the camcorder.
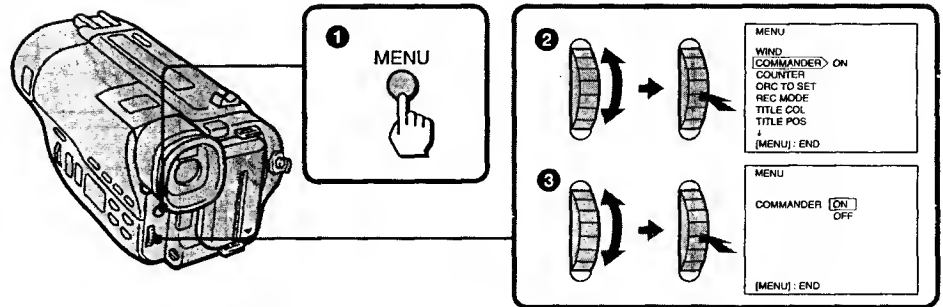

Remote control direction
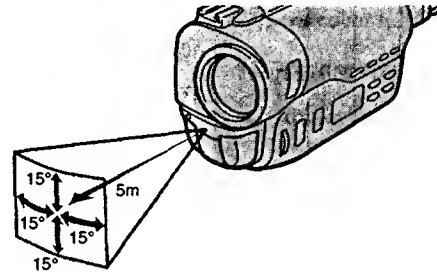
Notes on the Remote Commander
• Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
• Be sure that there is no obstacle between the remote sensor on the camcorder and the Remote Commander.
• This camcorder works in commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.
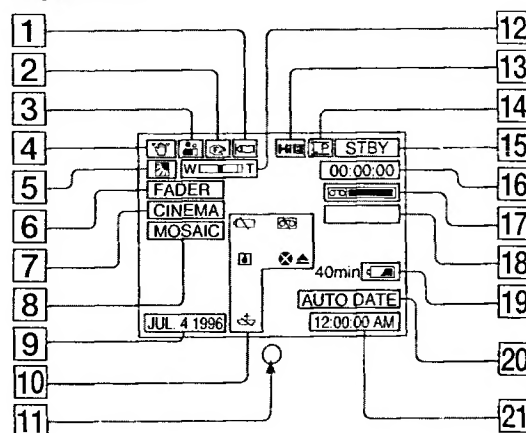
76

Attaching the shoulder strap

Attach the supplied shoulder strap to the hooks for the shoulder strap.

77
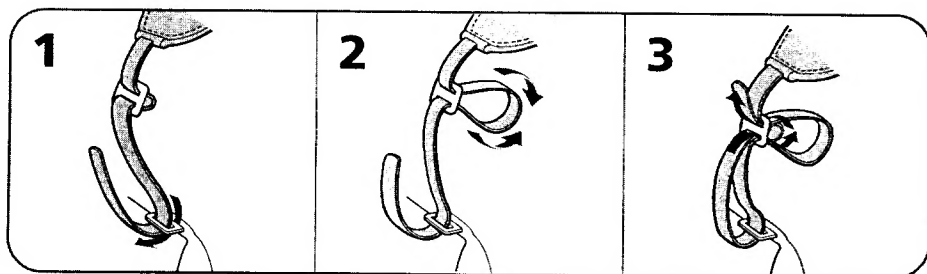
Operation indicators

Viewfinder

Display window

[1] WIND indicator (p.23)

[2] Manual focusing (p.30)

[3] PROGRAM AE indicator (p.31)

[4] Steady Shot indicator (p.35)

[5] Backlight indicator (p.33)

[6] FADER indicator (p.25)

[7] Wide mode indicator (p.26)

[8] Picture effect indicator (p.27)

[9] Data Code indicator (CCD-TR910 only)
(p.19)

[10] Warning indicators (p.79)

[11] Recording lamp/Battery lamp (p.10)

[12] Exposure indicator/Zoom indicator
(p.13, 34)

[13] Playing back or recording in Hi8 format
(CCD-TR910 only) (p.58)

[14] Lights up when recording or playing
back a tape recorded in LP/SP mode.
(p.58)

[15] Tape transport mode (p.17)
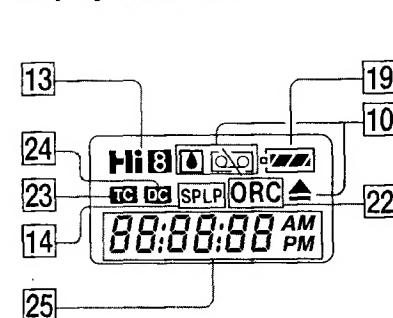
[16] Tape counter (p.23)
RC time code indicator (CCD-TR910 only)
(p.51)

[17] Remaining tape indicator

[18] Date search/Date scan indicator (CCD-
TR910 only) (p.44)
TIME CODE WRITE indicator (CCD-TR910
only) (p.51)
ZERO MEM indicator (CCD-TR910 only)
(p.41, 46)
Index search/Index scan/Index mark/
Index erase indicator (CCD-TR910 only)
(p.47, 48, 49, 50)

[19] Remaining battery indicator (p.59)

[20] AUTO DATE indicator (CCD-TR710 only)

[21] Date or Time indicator (p.57)

[22] ORC indicator (p.43)

[23] Time code indicator (CCD-TR910 only)

[24] Data code indicator (CCD-TR910 only)
(p.20)

[25] Date or Time indicator (p.57)
Tape counter (p.23)
RC time code indicator (CCD-TR910 only)
(p.51)

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If indicators flash in the viewfinder or in the display window, check the following:
♪: you can hear the beep sound when the BEEP is set to ON.

[1] **The battery is weak or dead.**
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

[2] **The tape is near the end.**
The flashing is slow.

[3] **The tape has run out.**
The flashing becomes rapid.

[4] **No tape has been inserted.**

[5] **The tab on the tape is out (red).**

[6] **Moisture condensation has occurred.**
(p.62)

[7] **The video heads may be contaminated.**
(p.63)
This indicator appears only on the
viewfinder.

[8] **Some other trouble has occurred.**
Disconnect the power source and contact
your Sony dealer or local authorized
facility.

[9] **The lithium battery is weak or is not
installed.** (p.56)

Additional Information

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